THE JEWEL HOUSE OF Art and Nature:

CONTAINING

Divers Rare and Profitable Inventions, together with ſundry new Experiments in in the Art of Husbandry.

WITH

Divers Chymical Concluſions concerning the Art of Diſtillation, and the rare practiſes and uſes thereof.

Faithfully and familiarly ſet down, according to the Authours own Experience.

By Sir Hugh Plat *of Lincolns-Inne, Knight.*

Whereunto is added, A rare and excellent Diſcourſe of Minerals, Stones, Gums, and Roſins; with the vertues and uſe thereof, *By D. B. Gent.*

LONDON: Printed By *Elizabeth Alſop.* and are to be ſold at her houſe in Grubſtreet, near the Upper Pump. 1653.

The true Portraicture of an Ear of Summer Barley, as it grew at Biſhops-Hall in Middleſex, Anno Dom. 1594. the ground being manured with Sope-aſhes, according to the manner hereafter expreſſed, Pag. 139.

5 10 15 20 25 30 35 40 45

Inches in Length.

To the Munificent Lover of all Learning, the Right Honorable, Boulſtroad Whitlock, one of the Lord Commiſſioners of the Great Seal of England, &c.

My Lord,

THere is not any thing in Nature ſo churliſh to it ſelf, which endeavoreth not to its own protection, it being the buſineſſe and delight of Nature to protect her ſelf. But to protect the Arts is a work (my Lord) which requires a Head of Honour, the depth of whoſe knowledge can underſtand their Myſteries, and the heighth of whoſe Dignities can countenance their Merits.

In this Treatiſe your Honour ſhall finde lively repreſented, how wonderfully Nature doth actuate, whether you look upon it as Nature Naturing, which is God; or, Nature Natured, which reflects onely on compounded Bodies; and, as the Philoſophers do define, is the beginning of their Motion, and their Reſt.

Your Honor may here behold the latter in all her Beauty; and obſerve how Induſtrious is Art to work her up to her Quinteſſence of Perfection; from whence many ineſtimable Treaſures may be derived, to advance as well the Mind as the Body of the Creature, and to improve the glory of the Creator.

My Lord, you have read that Art doth perfect Nature, which can never more properly be underſtood then in this ſenſe; for although Nature appears a moſt fair and fruitful Body, and as admirable in her variety as abundance; yet the Art here mentioned is as a Soul to inform that Body, to examine and to refine her actions, and to teach her to underſtand thoſe abilities of her own, which before lay undiſcovered to her.

My Lord, this is a Subject which is worthy of the greateſt and the graveſt apprehenſions, and deſerves the nobleſt Patronage; by which your Honour ſhall obliege both Art and Nature; and more particularly him, who is,

My Lord,

Your moſt humbly
devoted Servant,

The Table.

1 SUndry new and artificial ways for the keeping of fruits and flowers in their freſh hue, after they are gathered from their ſtalks and branches.
2. A perſpective ring that will diſcover all the cards that are near him that weareth it on his finger.
3. How to carry gold in a moſt ſecret manner.
4. How to keep or preſerve any fowl, or other peece of fleſh, ſound and ſweet, the ſpace of three weeks, or one whole moneth together, notwithſtanding the contagiouſneſs of the weather.
5. How to defend freſh water a long time from putrifaction.
6. *A* Merchants Compaſs, whereby he may know upon what point the wind blows, in his bed-chamber, and in the night time, without beholding the skie, or any vane abroad.
7. How to feed and fatten hens, chickens, geeſe, ducks, &c. in a more cheap manner, then hath as yet been made known or common to the world.
8. How to write a letter ſecretly, that cannot eaſily be diſcerned, or ſuſpected.
9. *H*ow to brew good and wholſome beer without any hops at all.
10. How to harden leather, ſo as the ſame ſhall laſt much longer in the ſuckers of pumps, then it doth unprepared.
11. A conceited chafing-diſh, to keep a diſh of meat long hot upon the table, without any coals therein.
12. How to roaſt meat more ſpeedily, and with leſs fire then we do in our common manner.
13. To make a new piece of Walnut tree or Wainſcot to be of one colour with the old.
14. How to turn five ſpits with one hand, whereby alſo much fire is ſaved.
15. A probable conjecture at the compoſition of hard Wax.
16. To help Veniſon that is tainted.
17. A Piſtol of two foot in length, to deliver a bullet point blank at eight ſcore.
18. A Piece whereby to perform ſome extraordinary ſervice.
19. To make green wood burn clear at the further end of the Oven.
20. How to walk ſafely upon a high ſcaffold with danger of falling.
21. A round ball of copper to blow the fire with.
22. How to erect over any brook, a cheap wooden bridge of 40 or 50 foot in length, without faſtening any timber-work within the water.
23. A cheap Lanthorn to carry a light in any ſtormy weather, without any defenſative before it.
24. To plum up a horſe, to keep him from tiring in his travel, and to make him ſome at the bit.

25. A drink for travellers to be made Ex tempore, when they want good beer or ale at their Inns.
26. How to endure ones hand in molten lead.
27. To hold an hot iron bar in a naked hand.
28. Sweet cakes made without either ſpice or ſugar.
29. One candle to make as great a light as two or three.
30. Timber made to laſt long in water works.
31. To cloſe the chops of green timber.
32. To grave any device on an Eg ſhel, and to through cut the ſame.
33. An appearance of ſtrange forms in a glaſs.
34. Ink to be carried in the form of a powder.
35. To write both blew and red letters at once.
36. Ink kept from freezing and moulding.
37. How to draw any pattern by a desk of glaſs.
38. Helps for the ſpeedy attaining of the Secretary hand.
39. To help Ink when it waxeth thick.
40. To renew old letters that are almoſt worn out.
41. To ſpeak by ſigns onely.
42. Limning with colours drawn from flowers.
43. A ready way to learn the A,B,C.
44. To grave and inlay colours into all the mettals.
45. To make bad paper to bear ink.
46. To make an eg to ſtand alone without any help.
47. To harden the white of an egg into a gum.
48. A cheap candle or lamp for poor folks.
49. To refreſh the colours of old oil pictures.
50. An excellent cement for broken glaſſe.
51. To dry gun-powder without danger of fire.
52. To draw fiſh to a certain place in the night by a candle.
53. A bait to catch fiſh with.
54. To draw fiſh into a tramel.
55. Divers good baits to catch fiſh with.
56. A ready way to catch Pigeons.
57. A worm to catch birds with.
58. To catch Crows, Jackdaws, &c.
59. To kill Seapies, Seaguls, &c.
60. To gather Waſps.
61. To keep garments and hangings from moth eating.
62. To help beer that ſowreth or is dead.
63. To help a Chimney that is on fire preſently.
64. To have Sea fiſh all the year long.
65. To make beer ſtale quickly.
66. To ſteal Bees.
67. To make a tallow candle laſt long.
68. How to tel the juſt number of apples, nuts, ſhillings, &c. as they lie in bulk together.
69. To prevent drunkenneſſe.
70. An excellent tent for a Diamond.

71. Oyl or verniſh made to dry ſpeedily.
72. To fetch out any ſtain.
73. To help wine that reboileth.
74. How to make a Bragget.
75. Clarifying of honey in an excellent manner.
76. To make an artificial Malmſie.
77. To keep Gaſcoign wine good a long time.
78. To keep walnuts good and moiſt a long time.
79. To preſerve the g'oſs of Spaniſh leather.
80. To help ſmoking chimneys.
81. Tinder and matches ſweet and of a new kind.
82. An excellent mixture to ſcour pewter withall.
83. To defend a horſe from flies in his travel.
84. To kill Rats in a Garner.
85. To take away the offence of noiſom vaults.
86. Sweet and delicate dentrifices, or rubbers for the teeth.
87. To help horſe and man that is tender footed.
88. To keep Oyſters good ten or twelve days.
89. To keep Lobſters, Cray-fiſhes, Prawns, &c. good and ſweet ſome reaſonable time.
90. To make ſmooth or gliſtering flores or walls.
91. To make Parchment tranſparent.
92. A cheap mortar to be uſed in buildings.
93. A conceited drinking glaſs.
94. To diſſolve gold, and to part it from gilt ſilver.
95. To know when the moon is at the full by a glaſs of water.
96. To melt down iron eaſily.
97. To put ſeveral wines in one glaſs.
98. The Art of Memory.
99. To make a conceited projection either upon Sol or Luna.
100. To nip a glaſſe, Hermetice.
101. A Waggon to be drawn with men.
102. A delicate ſtove to ſweat in.
103. The art of refining of Sugar
104. A Philoſophical diſcourſe touching ſundry new ſorts of ſoyle or Marl, for the better manuring of paſture or arable grounds; with divers conceits of Husbandry, not heretofore publiſhed.
105. The manner of drawing or extracting of the Oyls out of herbs or ſpices, with all neceſſary circumſtances.
106. How to rectifie the ſaid Oyls.
107. Divers ſpecial uſes of the ſaid Oyls, not heretofore publiſhed.
108. Divers ſweet or hand-waters made *ex tempore* with the ſaid oyls.
109. How to make ſundry ſorts of dainty butter with the ſaid Oyls.
110. To make any Cheeſe to taſte of your aforeſaid Oyls.
111. Wholſome and comfortable *Manus Chriſti* for weak ſtomacks.
112. Divers excellent kinds of Bottle-ale made with the ſaid Oyls.
113. Wormwood wine made very ſpeedily, and in great quantity.
114. How

114. How to ſweeten the oyl of Almonds with the aforeſaid Oyls, ſo as the ſame may ſerve the Perfumer inſtead of the Oyl of Ben.
115. How to draw Oyl of wax, amber, Jet, Turpentine, &c.
116. Of expreſſed Oyls.
117. How to make Cinamon water.
118. How to make the extraction of all herbs.
119. How to make ſalt of herbs.
120. How to draw and rectifie a ſpirit of Wine in divers manners, as well with fire as without fire.
121 To make Claret mount up in a red cloud into a glaſſe of water.
123. To extract the ſpirit of any vegetable or herb.
124. To give a pretty grace in taſt and property to the ſpirit of wine.
125. How to draw the ſpirit of honey.
126. How to diſtil Roſe-water, both good cheap, and at Michaelmaſſe; and to have as good yeeld as at any other time of the year.
127. How to dry Roſe leaves, or any other ſingle flowers in ſuch ſhape as they grow, without any wrinkles, ſo as a buſhel of moiſt leaves ſhall become a buſhel in meaſure when they be dry; and how to keep roſe cakes and roſe leaves all the year without worms.
128. Roſe-water and Roſe-vinegar of the colour of the Roſe, and ſo of the Cowſlip and Violet-vinegar.
129. How to diſtil Wine vinegar or good Aliger, that it may be both clear and ſharp for ſauce, and other uſes.
130. How to keep the juyce of Orenges and Limmons all the year.
131. How to purifie, and give an excellent ſmel and taſte to ſallet oyl.
132. How to diſſolve both Coral and Pearl.
133. How to clarifie with out any diſtillation, as wel the White, as the Claret wine vinegar, wherewith to make gallies, or other ſauces.
134. To make any decoction, whether of diet drink or other, in the ſummer time, to laſt longer then otherwiſe it would without help.
135 How to draw the true ſpirit of Roſes, and all other herbs, *&c.*
136. How to draw the true and ſimple Oyl of Roſes.
137. Ypocras made ſpeedily.
138. A touch at *Borax Chriſtalinus.*
139. How to make Camphire remain liquid in the form of an Oyl.
140. An artificial extraction of that ſweet ſirrup of Raiſins, *&c.*
141. How to preſerve Damſons, Cherries, Pear-plums, Gooſeberries, *&c.* in their own juyce or ſirrup without the addition of Roſewater.
142. The Art of Molding and Caſting.
143. A new kind of fire of leſs charge then ordinary with Sea coals.
144. *A* veſſel of wood to brew or boil in.
145. A Boulting Hutch.
146. *A* portable Pump.
147. *A* wholeſome, laſting, and freſh victual for the Navy.
148. A ſpeedy way for the inning of any breach
149. *A* light garment, and yet ſufficient againſt all rainy weather.
150. An additional diſcourſe of ſeveral ſorts of Stones, Minerals, *&c.*

Divers

Divers new and conceited

EXPERIMENTS

FROM

The which there may be ſundry both pleaſing and profitable uſes drawn, by them that have either wit, or will, to apply them.

1, *Sundry new and artificial ways for the keeping of fruits and flowers, in their freſh hue, after they are gathered from the ſtalks or branches.*

CAuſe new Forms of Lead to be made, either round or ſquare, that may fit the bigneſſe of your flower, or fruit which you mean to keep, in every of which forms place one flower, Cherry, Plum, or Pear, hanging by the ſtalk in ſuch manner as it grew; let theſe forms be well fitted with their apt covers, and ſodered very cloſe with ſoft ſoder, which will run with a ſmall heat, ſo as no air enter; bury them deep in a ſhady place, where the Sun may work no penetration. Some commend a ſandy, and ſome a gravelly ground, above all other for this purpoſe, but if they be well ſodered, I think any ground will ſerve the turn, or if you think good, you may hang them by lines in ſome cool and running brooke. Or elſe you may

put every ſeveral fruit or flower in his ſeveral earthen pot well leaded within, and covered with earthen covers, well burnt and leaded likewiſe, cementing or cloſing them together with the Goldſmiths wax or cement, conſiſting of ſtone-pitch, roſen, powder of brick, and ſuch like (although ſome content themſelves with molten brimſtone, and others with yellow waxe and roſen, molten and well wrought together.) Theſe little pots you muſt place within greater, and theſe greater within veſſels of wood, ſtopping up every breathing place that you can imagine (for here I can aſſure you that the ayr will be a player, unleſſe you can keep it out of the Alley perforce.) If you would afterwards bury theſe veſſels, then were it requiſite to pitch them well, both within and without; but if you mean to place them onely in cool or freſh vaults or ſellers, then may you very well ſpare this defenſative, ſo as the cask be ſtrong and tite of it ſelf. Yet ſome commend the keeping of fruit or flowers in glaſſes made of purpoſe for them, to be the beſt of all others, ſo as the glaſſes be made with long necks, and be nipped (*hermetice*) with a pair of hot tongs, the manner whereof you ſhall find hereafter ſet down *num.* 100. I dare not commend it in any high terms, the dipping of fruit in wax well tempered with ſome Turpentine, Pitch, Roſen, ſweet ſuet, or Barrows greace: where alſo ſome would have the fruit firſt wrapped in paper to keep it the cleaner, although I know there is ſomewhat to be performed this way in ſome kinds of fruits which begin to rot from the outward parts inwardly. But if the fruit begin to rot firſt at the core, as the Katherin pear, & divers other ſorts of fruit do, then all the outward

covers

covers and encloſures whatſoever (yea, though they were dipped in diſſolved Amber, which is counted the pureſt and moſt defenſative garment of all the reſt) will never be able to turn nature out of her bias. [Here alſo ſharp ſpirited wits have imagined, that if ſpirit of wine well rectified, were glutted with the imbibition of any flower, until it could work no more upon the ſame, that thereby it were poſſible to preſerve any flower of the ſame kind a long time therein. But this is to be underſtood onely of the dry leaves, which bring nothing elſe but the tincture and ſtrength of the herb with them, and not of the moiſt leaves, which will leave a putrifying flame behind them, which in time will help to corrupt the ſpirit. Now me thinks I ſee a whole troop of gallant Dames attending with their liſtning ears, or rather longing with their great bellies, to learn ſome new found skill, how they may play at chop cherry when cherry time is paſt. Well, to give theſe Ladies ſome content, I will unfold a ſcroul which I had long ſince as carefully wrapped up as ever any of the Sybils did their fatal Propheſies, wherein I will make them as cunning as my ſelf (ſaving onely that I will reſerve one ſtrange Venue to foil a Scholler withal if need be.) The ſecret is ſhort, Let one Element be included in another, ſo as the one may have no acceſs, nor participate with the other. But this peradventure is too Philoſophical for Women; then receive it Ladies with plain tearms into your open lips. For want of glaſſes with broad skirts (whereof notwithſtanding I do think that there are enough to be had, if you can be ſo gracious with the maſter of the Glaſſ houſe) cauſe new Pewter veſſels of ſome large reception to be made, and of

the fashion of bell Saltsellers, with divers eys or hooks hanging in the inside, at the which you must fasten the cherries by their stalks, and hang them so as that one may not touch another, the skirts of which vessels you must compass with leaden rings of such weight as may be able to press them down to the bottome of some leaded pan, wherin you must place them, having first filled the pan almost full with fair water, prepared as is here set down, *num.* 5. lest by putrifaction of the water, the cherries also begin to putrifie with it. Yet here you must be carefull, that the cherries hang within the air of these inner vessels, not touching the water, which may happily rise one inch or somewhat more within the innermost skirts of them. And thus the air being kept cool, and defended from change (whose alteration from heat to cold, and from moisture to drines, is the principal means of the ruinating of all mortal bodies) will preserve such cherries as it receiveth in charge for two whole moneths at the least, as I have long since proved. And peradventure if you make choise of sound fruit gathered after two or three fair days together, the dew being sufficiently drawn from them by the Sun, you may yet keep them somewhat longer.

But the onely pleasure of this secret is performed in glasses, through whose perspicuity after some reasonable quantity of water first removed or divided, one may discern weekly in what plight they are. It seemeth very probable, that if cherries as they hang upon their branches, and before they come to their full maturity, were included in an earthen vessel of some receipt, having a party cover with a hole in the middest, divided into two equal parts, and every breathing place well stopt or luted, and the Sun sufficiently

ficiently defended from the pot, that ſo the fruit would keep freſh a long time upon the tree whereon it grows.

This ſecret extendeth generally to all fruit. And it is not much unlike to the ſpreading of a Tent over a Cherry tree about fourteen days or three weeks before the Cherries were ripe, practiſed by a Surry Knight not many years ſithence, whereby he did greatly backward the tree in his bearing, now and then watering the Tent in a ſunny day with cold water, whereby the ſtrength of the Sun beams became very weak upon the tree; and when he was diſpoſed to ripen them ſpeedily, he withdrew the Vail, giving a freer paſſage to the hot and ſcorching beams of Phœbus. By the help of ſome one of theſe, or of ſome other of the like kind and quality, it was my hap to preſent unto a late Lord Mayor of the City of London 8 green and freſh Artichokes upon Twelf day, with a ſcore of freſh Orenges, which I had kept from Whitſuntide then laſt paſt; at which time I was alſo furniſhed with two hundred Artichokes for my own proviſion; which continued a ſervice at my table all the Lent enſuing, to the great contentment of ſundry of my gueſts, who would have been right glad to have dined with the ſecret onely.

2. *A perſpective Ring, that will diſcover all the Cards that are near him that weareth it on his finger.*

A Chriſtal ſtone or glaſs of the bigneſs of a two-peny peece of ſilver, or thereabout, being the juſt half of a round ball or Globe, and cut hollow within, having a good fyle ſweetly conveyed within

the concave superficies thereof, and the stone it self neatly polished within and without, will give a lively representation to the eye of him that weareth it, of all such cards as his companions that are next him do hold in their hands, especially if the owner thereof do take the upper end of the table for his place, and leaning now and then on his elbow, or stretching out his arm, do apply his Ring aptly for the purpose. I have discovered this secret, rather to discourage young Novesses from card-play, who by one experiment may onely guess, how many slights and cousenages are daily practised in our dicing and gaming houses, not doubting but that the general publication thereof will make the same so familiar with all men, as that I shall not justly be charged of any, to have taught old knaves new school-points.

This secret is as yet meerly French, but it had been long since either denized, or made English, if there could have been found any sufficient workman amongst us, that could have filed the stone so artificially as it ought to be. There be some English Knights that can sufficiently testifie the truth hereof, by that which they have seen amongst the French Gamesters.

3. *How to carry Gold in a most secret manner.*

MElt down some Gold, and mix therewith a sufficient quantity of Lead (but then you shall be forced to test the same before you can recover your Gold again,) and this is the most secret way of all the rest, because there will be no shew or appearance of Gold either within or without; but the separation will be somewhat troublesome. But if you would

would carry Gold about you in ſuch manner, as that without any other mans help, you may divide the Gold your ſelf from the mettal wherein you convey it, then caſt bullets of Gold in a piſtol mold, which you may ſo aptly hang within ſome mold of greater bore, that may fit the piece which you carry with you (which will be alſo a good means to remove all ſuſpicion of art) as that by pouring of Lead round about them, they may ſerve inſtead of coars to your greater bullets, which with a ſmall heat are ſoon parted in ſunder. But if you would carry coin, then dip your Angels or Crowns in molten Lead that is not over hot, and convey them by art within ſome ſmall and feat Leaden weights, that may agree with the *Aver du poiz*. Some commend the powder of Marble, mingled with molten Roſin, to lap Angels or other coin in, before it be through cold. There be alſo divers Philoſophical ways for the ſecretting of *Sol* and *Luna*, but thoſe are reſerved for higher purpoſes.

4. *How to keep or preſerve any Fowl or other peece of Fleſh, ſound and ſweet for three weeks, or one whole moneth together, notwithſtanding the contagiouſneſs of the weather.*

MAke a ſtrong Brine, ſo as the water be over-glutted with ſalt, and being ſcalding hot parboil therein the Fowl or Fleſh which you would preſerve ſome reaſonable time, that is to ſay, according to the greatneſſe or groſſneſſe thereof, then hang it up in a convenient place, and it will laſt a ſufficient time without any bad or overſaltiſh taſt, as I can teſtifie of my own experience. This is thought good

to

to be publiſhed both for the better preſervation of Mutton, Veal, and Veniſon, whereof a great deal in this land is yearly loſt, in hot and unſeaſonable ſummers, as alſo for the benefit of our Engliſh Marriners, which are forced ſometimes to victual themſelves in ſuch untemperate climates, where no fleſh will laſt ſweet four and twenty hours together, by reaſon that they have no means to make the ſame to take ſalt, which without all queſtion will enter this way, and penetrate very ſpeedily by reaſon of the hot and fiery ſpirit of ſalt thus prepared. Some do uſe to parboil their Fowl, after they have taken out the garbage, and then do dip them in Barrows-greace, or in clarified butter, till they have gotten a new garment over them, and then they lay them one by one in ſtone pots, filling the ſtone pots up to the brim with Barrows greace or clarified Butter, wherein they do prick ſome Cloves, and ſprinkle dried ſalt upon the uppermoſt face thereof, placing the pots in ſome convenient cool place, ſtopping them very cloſe, and they will keep ſweet and good a moneth together.

5. *How to defend freſh water a long time from putrefaction.*

TO ſo many casks as you fil with water, take the number of empty casks, and when your water begins to change, draw it forth into your freſh casks (being ſweet and good) and to a Hogſ-head put one pound of the beſt Brimſtone beaten to powder, and incorporate it well with your water, and your water will keep good and ſweet many moneths together: ſome have uſed to adde a good quantity

tity of ſalt, but I have known by good experience, that it may be as well preſerved without it. *Socius* and others that made triall of many experiments in this kind, do chiefly commend the firſt way ſimply by it ſelf, for that ſalt giveth a brackiſh taſt, and may not agree ſo well with many mens bodies. If your veſſels be kept very cloſe, and are pierced about the middle, it will adde much to the benefit which you deſire to find hereby. Theſe few conceits I have thought good to impart for the benefit of the whole Navy of England, for the which here is provided more dainty cates, then they have been hitherto acquainted withall.

6. A Merchants Compaſs, whereby he may know upon what point the wind blows in his bed Chamber, and in the night time, without beholding the skie or any vane abroad.

FAſten a large vane to a long iron rod, let the ſame riſe through the midſt of the roof, or ſome other part, that may beſt agree with the room wherein you mean to place the ſame, and let the iron ſteal thereof, come through the ſealing of your chamber, and at the end of the rod, let there be a ſharp *index*, that may point upon a table of wood (which for that purpoſe muſt be drawn, with al the parts of the wind upon it like a Marriners Compaſs) to that wind which bloweth. You muſt have divers ſtayes of iron by the way as the rod paſſeth to keep it upright, having holes in the midſt of them, and wrought with lappets at the ſides, wherein to faſten nails to a long poſt, which for the ſame purpoſe muſt be placed within the garret, between the ſealing of your chamber and

and the roof thereof. Note that the *index* and the edg of the vene muſt alway ſtand upon two direct contrary points.

7. *How to feed and fatten Hen, Chickens, Geeſe, Ducks &c. with divers other ſorts of Fowl, in a more cheap manner, then hath as yet been made known or common to the world.*

I Know that divers have contented themſelves, to feed and fatten them with grains onely, whereof they have made a great benefit unto themſelves; by reaſon of the eaſie price for which they are ſold. But if you take the bloud of beaſts whereof the Butchers make no great reckoning, fill ſtone pots therewith, whoſe covers may be full of ſuch holes as that the fleſh flies in ſummer-time, may eaſily get in and out at the ſame, you ſhall find the bloud by means of the flie-blows and putrifaction together, wholly converted into white and glib worms (which the anglers call Gentils) which will fatten them exceedingly, and make them eat moſt tenderly. A Dutch man that firſt practiſed this ſecret in a Noble mans houſe of England, (whoſe fowl for the tenderneſſe of their fleſh, was highly commended of all his gueſts, had a yearly ſtipend of twenty nobles conferred upon him by his Lord, during his natural life, for the diſcovery of the ſecret. Yet I could wiſh that theſe worms did firſt ſcour themſelves either in moſſe, loam, or bran, before they were ſcattered amongſt the fowl: And if notwithſtanding this help the food ſhall ſeem offenſive to our weak ſtomacks, eſpecially being made acquainted with it before hand, then receive the ſame in a better form, and in a ſweeter manner at my hands

hands, who have always desired to give all the grace which I might to any secret of good use. Boil this bloud with some store of bran amongst it (perhaps grains may suffice, but bran is the better) until it come to the nature and shape of a bloud pudding, and therewith feed your fowl as fat as you please; and this will be both a cleanly and a wholsome feeding for them. Some comend Carrots, Turnips, Parsnips, and Pompeons, first sodden, and then some bran or course Pollard mingled therwith. You may feed Turkies with bruised acrons, and they will prosper exceedingly with them. Some to fatten their Capons speedily, put them into coops, wherein each bird hath a several room divided from the rest, being so straight and narrow as that the hen ot capon may onely feed himself and roost therein, not being able to turn his body, thereby perswading themselves that wanting motion and exercise he will soon grow to be fat, and of grease. Some do use to keep them without meat til they be exceeding hungry, and then they give them their fill. Others do soak chippings and other crusts of bread, in broken beer or flatten milk, wherwith they do afterward feed their capons. Out of all these a good housewife will chuse both the likeliest and the best.

8. *How to write a Letter secretly, that cannot easily be discovered or suspected.*

WRite your mind at large on the one side of the paper with common ink, and on the other side with milk, that which you would have secret, and when you would make the same legible, hold that side which is written with ink to the fire,

and the milky letters will ſhew blewiſh on the other ſide. Or els rule two papers of one bigneſs with lines of an equal diſtance, make the one full of glaſs windows, through which you muſt write your mind upon a ſecond paper, then fill up the ſpaces with ſome other idle words: but if all were made to hang together in good ſenſe, it would carry the leſs ſuſpition. Each friend muſt have one of the cut papers to read all ſuch letters as ſhal be ſent to him, and this way of writing wil trouble a good decipherer to bring into perfect ſenſe. Alſo you may firſt write a letter that may carry ſome good ſenſe to your friend, but let the lines be wide aſunder. Then between theſe lines write your ſecret letters with gal water only, wherein the gals have been infuſed but a ſmall time (for if after you have written with it, there be any ſenſible color left behind on the paper, you muſt throw away that water, and make new.) This being dry, and of one colour with the paper, will give no cauſe of ſuſpitio, and the rather becauſe the letter purporteth a ſufficient ſenſe already. Now for the diſcovery of it, you muſt diſſolve ſome coppreſs in fair water, & with a fine calaber pencil, firſt dipt in the coppreſs water, you muſt artly moiſt the interlining of your Letter, and thereby you ſhall make it ſufficiently legible. This is one of the moſt ſecret ways that I know. But yet the fineſt conceited way of all in my opinion, is the cloſe carriage of a letter in a Lawn or Cambrick ruff or handkerchief, which a man may wear for his neceſſary uſe, without the defacing of any one letter contained therein. And this ſerveth moſt fitly for a Love letter, wch may without all ſuſpition of friends be eaſily preſented in a handkerchief, to any gentlewoman that ſtandeth well affected to her Secretary.

There

There is alſo a ready way without changing the Alphabet, to write ones mind ſpeedily upon paper, and yet the ſame not to be deciphered without the help of a rolling pin of the ſame ſcantling with that whereon it was firſt written. But theſe two latter conceits (for ſome reaſons beſt known to my ſelf) I may not ſo boldly impart as otherwiſe I would.

9. *How to Brew good and wholſome Beer, without any Hops at all.*

Since my profeſſion in this Book is in ſome ſort to anatomize both Art and Nature, without any regard of private mens profits, whom it may either eſſentially or accidentally touch: I am bold therefore, without craving any leave to do good, to renue, or rather to confirm & ratifie an ancient opinion & practiſe, which long ſince in the great dearth and ſcarcity of hops, many Brewers of this land have been forced to put in uſe for the better ſupportation of their weak and declining eſtates. But becauſe they failed in proportion (without the which there can be nothing compleat or abſolute) they ſuffered a good conceit to die in the birth. And no marvel then if wormwood, notwithſtanding it be a ſimple ſo highly commended of al the ancient and new Herbariſts for his great and ſingular effects in Phyſick, be in a manner utterly abandoned of all the Brewers of our time (except a few that can make a difference between 5 s, and 5 l. charge, when hops are ſold for 50 s, the hundred) ſeeing as yet not any one of them hath ſo Clarkly wrought upon this ſimple, as to cover and hide the taſte thereof from the well mouthed Aleconners of this Common-wealth. Which weakneſs of theirs, becauſe it conſiſteth wholly in the

want of a due proportion between the Malt and other beer corn in reſpect of Wormwood, I have thought good to ſet down a ſufficient direction for ſuch as are wiſe and willing to do good both to themſelves and to their Country, whereby they may eaſily, even in one days days practiſe attain to the ful perfection thereof.

Suppoſing then that your Wormwood is either cut down in the leaf before it be ſeeded, or being ſeeded that it is cut in ſhort pieces, whereby there may be made an equal mixture of the whole bulk together (for you muſt note, that the ſeeded tops are much ſtronger, and more oyly then the reſt of the leaves or ſtalks) make firſt a decoction of four ounces of hops with nine gallons of water (which is the proportion that ſome Brewers in ſome ſorts of drink do uſe) and when you have gotten out by ebulition the full ſtrength and vertue of them, keep the ſame apart, and begin likewiſe with ſome ſmall proportion of Wormwood to the like quantity of water as before; and when you have beſtowed as much time and fire herein, as you did about the hops, then taſte each of them by it ſelf, and if you find the ſame to exceed the firſt in bitterneſſe, then begin with a leſſe proportion of Wormwood, and ſo reiterate your work, until you have equally matched the one with the other, and then may you ſafely proceed by the rule of proportion to a barrel, and from thence to a tun, and ſo to a whole brewing. Neither let the exceſſive bitterneſs of Wormwood in his preſent taſt any thing diſmay you; for if you did but taſt the decoction of hops onely, before the mixture of the ground Malt (which doth wonderfully ſweeten the ſame) you would think it a very unapt liquor to be wrought

wrought up into ſo pleaſing a drink as our ordinary beer doth ſhew it ſelf to be. For it is the hops onely which maketh the eſſential difference between Beer and Ale, and that by allaying the exceeding luſciouſneſſe of the Malt, with his bitterneſſe, whereby both uniting themſelves together, become a ſavory and wholſome drink for mans body. Which may be as well in every reſpect performed with Wormwood as with the Hop, yea and peradventure with Centuary, Artichoke leaves, or *Aloes Hipatique*, as ſome work-maſters have confidently affirmed unto me. And though the Hop be uſual in drink and the wormwood onely in medicine, whereby ſome may happily be perſwaded, that it is inconvenient for men that are in health to drink a medicine continually to their meat, yet let this be a ſufficient anſwer to that objection, that it is the doſe onely that maketh the difference herein. For I can aſſure you in my own experience, and by the experience of one of the beſt experienced Brewers of London, who yet liveth, that if you give a double or treble quantity of good Engliſh Hops, to an ordinary guile of ſtrong beer, you ſhal find the ſame to be a ſufficient preparative to your body for the beſt purgation that ſhall be miniſtred after. And this can one of the right honourable Peers of this land ſufficiently witneſſe, who together with ſome good part of his retinue, having well taſted at a dinner of ſuch beer, as (by the miſpriſion of the Brewer of Engliſh hops for Flemiſh hops) was ſo over hopped, that both himſelf, and the reſt of his family that was then about him, were ſuddenly ſurprized with a great looſneſſe. And this is the reaſon why venice Turpentine, which being miniſtred in a ſmal doſe is given for the ſtrengthening

ing of the back, and to ſtay the running of the reins; yet if it be taken in the quantity of an ounce at once, it will purge ſufficiently in divers bodies: ſo then either let there be no more taſte of wormwood then there is of hops in our drink, and we ſhal find no difference in effects, but ſuch as ſhall commend and grace the wormwood beyond the hop; or elſe let beer be advanced with the hop, to the bitterneſs of wormwood wine, and ſo we ſhall find the hop far to exceed the wormwood in his malign quality. Neither would I have any man to think, that I do either wrongfully intrude upon other mens poſſeſſions, or preſumptuouſly undertake a charge which I cannot perform; for I am in by diſcent, and have continued 5 years in poſſeſſion at the leaſt, and therefore am not eaſily to be removed, without a Philoſophical action cõmenced againſt me. And becauſe you ſhall further know that I have ſome reaſonable skill in my trade, I dare undertake without the help of any yeaſt at all, to bring the wort either of Ale or Beer to his perfect workmanſhip (wherein it ſhal continue at the leaſt 6 or 7 days together) without any intermiſſion, and that only by a Philoſophical ſtirring up of the fire of nature which ſhall extend and ſpread it ſelf *à centro ad circumferentiam*, till it have digeſted the whole body to his perfect ripeneſs or maturity. Thus much I have thought good to publiſh for the credit of Wormwood, and for the benefit of this Iſland in ſundry reſpects, which I ſhall not need to particularize at this time, becauſe they are ſo commonly know to all men. And though I know I may be overweyed either with the Flanders Merchants, or with the great Hop-maſters of England, whoſe foundation is ſo deeply laid, that a few looſe lines can neither ſhake nor

nor ſtir the ſame: yet either knowing, or at the leaſt perſwading my ſelf to maintain the truth, before I give it over I will crave the liberty of the Schools, *quod fiat controverſia.* And in the mean time thoſe which will not be ſatisfied of the wholſom and rare medicinable helps of the one, together with the weak and feeble vertues of the other (which was but a Hedgebird the other day, though now it be perking ſo proudly upon its poles) I will refer them to the learned Herbals of Dioſcorides, Matheolus, Doctor Turner, Dodoneus, Turnizerus, and the reſt.

10. *How to harden leather ſo as the ſame ſhal laſt much longer in the ſuckers of pumps, then it doth unprepared.*

THis ſecret is ſo neceſſary for the whole land, as that I muſt crave pardon of my eſpecial good friend for the diſcovery thereof. Lay ſuch leather as is well tanned, to ſoak in water wherein there hath been ſome ſtore of the filings of iron a long time, or elſe in the water that hath lain long under a Grind-ſtone, into the which ſuch iron as hath from time to time been ground away, hath fallen, and there ſetled. This hath been found to be a ſecret of good uſe, by one of the Pump-makers of our time, & if thou canſt pump out any better uſes of this ſecret, take them in advantage, and remember where thou hadſt them.

11. *A conceited Chafing-diſh to keep a diſh of meat long hot upon the Table without any coles therein.*

LEt the diſh be ſomewhat deep, and cauſe the chafing diſh to be made of ſuch ſhape as may beſt receive the ſame, into the which you may convey a

peece of iron red hot, the ſame being of an apt form to lie in the bottome of the chafing-diſh. This will continue his heat a long time, & if you have another ſpare iron to heat as the firſt cooleth, you may keep any diſh of meat warm as long as you think good: from this ground did thoſe warming pins firſt ſpring which of ſome are called Froes, and being put into their caſes, and thoſe caſes wrapped in linnen bags, do ſerve to heat beds with, and to caſt one into a kindly ſwear. The like device is alſo uſed by others in conveying of ſuch iron pins into hollow boxes of wood firſt lined inwardly with mettal, and iron cheſts, either to lay under their feet where they uſed to write or ſtudy in cold weather, or in their coaches to keep their feet warm. The now diſtreſſed King of Portugal cauſed a pair of woodden ſoles to be made for a pair of ſhoes which he had to fit in, which he would warm at his pleaſure with *Mars* well rubified.

12. *How to roſt meat more ſpeedily, and with leſſe fire then we now do in our common manner.*

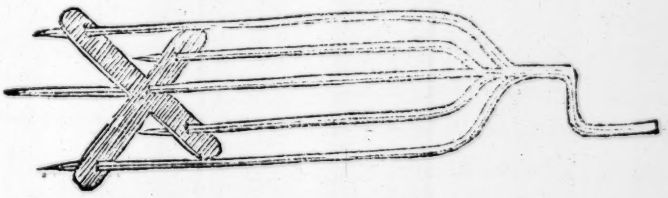
MAke a ſquare and concave box, or elſe of the faſhion of a Cilinder of iron plates, or elſe of wood lined with thoſe plates, long enough, and large enough for ſuch and ſo many joynts of meat as you mean to roſt at once; within which Cilinder let the meat turn as it roſteth. For the reflexion of the heat that is gathered within the box, will make great expedition. Note that the box muſt onely cover the meat, becauſe you are to leave a fire (*if* need be) to hang on a pot or kettle over the ſame fire. It muſt alſo be cloſe on every ſide, ſaving onely againſt the fire, and at the ſides thereof you muſt have ſlits to let in

in the ſpit. I have heard of the like deviſe heretofore practiſed by an outlandiſh potter in burnt clay, for the which he had his priviledge, but his device wanted a cover, it was exceeding heavy very apt to be broken, and not ſo ſtrong in reflexion as this mettalline deviſe, eſpecially if it be kept clean and bright.

13. *To make a new piece of Walnut-tree or Wainſcot to be of one ſelf-ſame colour with the old.*

FIrſt ſtrain Walnut rinds well purified with ſome liquor, and with a ſponge rub over your wood throughly well, and after it is dry, rub the ſame over again with good old Linſeed oyl, and it will become of an excellent brown colour: then if the other wood which you would have match with it, do much differ from the new in color, you muſt alſo with a fine ſand ſcour off all the filth and greace of your old wood, and then rub it alſo over with Linſeed oyl. Some take broken beer onely. By this means I had an old wainſcot window, that was pieced out with new wainſcot by a good workman, and both became very ſuitable and of one colour.

14. *How to turn five ſpits at once with one hand, whereby alſo much fire is ſaved.*



FAſten five round ſpits together, like the teeth or tines of a mole-ſpear, with a handle in the center of them, let them be placed in a reaſonable diſtance the one from the other, according to the bigneſſe of the joints of meat that you would roaſt upon them, (I take them to be moſt apt for fowl) you muſt alſo have a croſs of iron, having a hole in every corner thereof, to receive the ends of theſe ſpits, which may be propped with a ſtay behind that it fall not backward: Uſing theſe ſpits, you ſhall not need to raiſe your fire upon ſuch high ranges as otherwiſe you ſhall be forced to do, when one ſpit is placed directly above another. This ſecret I have borrowed out of Pope *Pius* the fifth, his Kitchin.

15. *A probable conjecture, at the compoſition of hard Waxe.*

I Am verily perſwaded that the eſſential part, if not the whole body thereof, is made of the gum *Lacca* peradventure refined a little, or incorporated with ſome other apt body. For I have ſealed therewith oftentimes, and do find the ſame to agree with hard wax, in the perfect taking of the impreſſion of the ſeal, in the manner of the burning, in the ſmell, and in brittleneſs. It onely differeth in clearneſſe and colour. I have heard that the Barbarians do make a bright and orient crimſon colour therewith upon leather, for which purpoſe it is much ſought for in England, to tranſport into Barbary.

16. *To help veniſon that is tainted.*

IF it be much tainted, cut away all the fleſh that is green, and cut out all the bones, and bury it in a thin

thin old courſe cloath a yard deep in the ground for 12 or 20 hours ſpace, and it will be ſweet enough to be eaten, as I am informed by a Gentlewoman of good credit, and upon her own practiſe.

17. *How to make a Piſtol whoſe barrel is 2 foot in length to deliver a bullet point blank at eight ſcore.*

A Piſtol of the aforeſaid length, and being of the petronel bore, or a bore higher, having eight gutters ſomewhat deep in the inſide of the barrel, & the bullet a thought bigger then the bore, and ſo rammed in at the firſt three or four inches at the leaſt, and after driven down with the ſcouring ſtick, will deliver his bullet at ſuch diſtance. This I had of an Engliſh Gentleman of good note for an approved experiment.

18. *A piece whereby to perform ſome extraordinary ſervice either by ſea or land.*

CAuſe a long barrel to be made, and of the bore of a Tennis bal, of five or ſix foot in length and well ſtocked, having within twelve inches of the mouth thereof, a hooking iron of four inches in length forged to the neather part of the piece, by which hook you may ſtay your piece by ſome rail, or other piece of Timber, whereby you may ſafely diſcharge the ſame, without fear of any recoil upon you. I leave the full uſe thereof to be found out by Martial men. This invention I had of the fine lymner of Lambeth, being a Gentleman of good conceipt in all ingenious deviſes.

19. *To make green wood to burn clear at the further end of the Oven.*

IF you burn green wood in an Oven, it burneth ſomwhat clear towards the mouth of the oven, but commonly black and deadiſh at the further end, whereby the oven is never ſufficiently heated to bake well. You ſhal find a remedy thereof in this manner. Divide the mouth of the oven into four equal parts, and cauſe a bar of iron to be made as long, or ſomewhat longer then the mouth of the oven, & in bredth one exact fourth part thereof. Faſten this bar overthwart wiſe in the middle point of the oven mouth, and this will make a partition between the fire and the air, ſo as the air will paſſe under the bar to kindle the fire, and the flame will iſſue over the bar, and ſo the ſmoke which before did choke the fire, will alſo have his paſſage.

20. *How a man may walk ſafely upon a high ſcaffold or piece of Timber, without danger of falling.*

THis is eaſily performed by wearing of a pair of ſpectacles, whoſe ſights muſt be made ſo groſs as that he which weareth them may not diſcern any thing a far off but at hand onely. For it is the ſight onely of the ſteepneſſe of the place, that bringeth the fear and overturneth the brain. By this means I have heard that the Engliſh man which diſplayed an ancient upon a ſcaffold near the top of the pinacle of Pauls ſteeple, did help himſelf in his deſperate attempt.

21. *A round ball of Copper or Latten, that will blow the fire very ſtrongly, onely by the attenuation of water into air; which device may alſo ſerve to perfume with.*

MAke a round bal of copper or latten, of the bigneſſe of a ſmall bowl, ſoder thereunto a round pipe or neck, of three or four inches in length, and ſomewhat leſs then a Gooſe quill, at the end whereof, in the manner of an elbow, ſoder on a leſs pipe no bigger then a ſtraw, whoſe vent in the end may not much exceed the bigneſs of a pinhole, let al the joints and ſides be ſodered with ſilver ſoder; heat the ſame well in the fire, and then put it into a veſſel of cold water, and it will ſuck ſome of the water into it; you may heat the ſame ſo often, till by the peize thereof you may be aſſured that it is more then half full. Then ſet this ball upon a few glowing coals, and you ſhall find the ſame to give a very ſtrong blaſt againſt the fire which you mean to kindle, directing the noſe of theſe bellows towards the ſame. I make no queſtion, but that it is poſſible with a very ſmall help to melt down either gold or ſilver with theſe bellows, & that the ſame may be made ſo large as that they will blow one whole hour together, without any intermiſſion. If you make a little round ball of ſilver in this manner, onely with a ſmall and ſtraight pipe, riſing out of the body therof, you may put ſomeroſe-

water,

water, or some other sweet senting water therein, and therewith perfume your chamber, and by this means a small quantity of sweet water will be a long time in breathing out.

22. *How to erect or build over any Brook, or small River, a cheap and wooden bridg of 40 or 50 foot in length, without fastening any timber work within the water.*

PEece the Timber work in such sort, as that it may resemble an arch of stone; make the joynts strong, and bind them fast with cramps or dogs of Iron: Let this bridge rest upon two strong pillars of wood at either end, both being well propped with spurs, and at either end of your bridge make a strong buttress of brick, into the which you must let your pillars and spurs, that by no means they may shrink or give backward: then plank over your bridge and gravel it, and it will last a long time. This is already in experience amongst us.

23. *A cheap Lanthorn, wherein a burning candle may be carried in any stormy or windy weather, without any horn, glass, paper, or other defensative before it.*

MAke a four square box of 6 or 7 inches every way, and 17 or 18 inches in length, with a socket in the bottome thereof; close the sides wel, either with dove tails or cement, so as they take no air; leave in the middest of one of the sides a slit or open door, to put in the candle, which from the bottome to the top thereof, may contain 6 or 7 inches in length, and two and a half in breadth: place your candle in the

the ſocket, and though it ſtand open and naked to the air without any defence, yet the wind wil have no power to extinguiſh the ſame. The reaſon ſeems to be, becauſe the box is already full of aire, whereby there is no roome or place to contain any more, neither can the air find any through paſſage, by reaſon of the cloſeneſſe thereof. The ſocket would be made to ſcrew in and out at the bottome, and then you may put in your candle before you faſten the ſocket. This is borrowed of one of the rareſt Mathematicians of our age.

24. *How to plum up a horſe, and make him fat and luſty, as alſo how to keep a jade from tiring by the way, and to make him to foam at the bit.*

TAke *ænula campana*, Comminſeed, Turmerick, and Anniſeeds, of each a penny worth, and ſeeth them well (with three heads of Garlick amongſt them well ſtamped) in a gallon of ale, then ſtrein it, and expreſſe as much of the ſubſtance as you may well wring out, and give your horſe to drink thereof bloud-warm a full quart at once, then ride him til he be hot, then ſtable him, litter him well, and curry him untill he be cold, do the like two or three mornings together, and ſo turn him to graſſe, and he will thrive wonderfully in a ſhort time. Some commend a handfull of grunſell ſodden in the aforeſaid Ale with the reſt of the ingredients. But if you keep him in the ſtable, give him to eat in his provender the roots of *ænula campana*, with ſome Commin

seeds both beaten together, or the *Ænula campala* small shred for 14 days together, and it will make a lean Jade to thrive more in one moneth then otherwise he would do in three. And when you ride abroad upon a hired Hackney, carry a good quantity of the powder of *ænula campana* with you in some leather bag, and when others do bait their horses in their ordinary manner, your horse being first well walked, littered, and rubbed, give him a handfull of this powder in a quart of strong ale with a horn, and tie his head high to the rack, and you need to give him no other or very little provender until night, then let him be well meated, and give him in the morning two peny worth of bread, and his ale with the powder, but water at night. This a friend of mine yet living, did learn of a good fellow that had been a rank rider in his days, by whose means, though his hackny tyred at Bristol, yet this companion for his better incouragement, seeing him out of al heart, by reason that he was like to lose so good company as then was gathered together, he exchanged horses with him, and brought the hackney (by the means aforesaid) very quick and lively up to London, Also if you tie a pretty bunch of Penni-royal about the bit within the horses mouth, the horse champing thereon, wil foam gallantly, and travel with much more courage. Another Gentleman, who also attendeth upon a very honourable person, told me, That whensoever he found any Jade to tyre under him, he would presently take off his saddle, and with a good quantity of Arsmart (which is an herb that grows almost in every ditch and standing water) rub him well on the back under the saddle, & afterward lay a good quantity of Arsmart under the saddle, and so ride him a-

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ny reaſonable journy. Theſe ſecrets I thought good to diſcover for the benefit of all Engliſh travellers, and I hope they are true becauſe my authors are alive, and ſpeak of their own experience, and not by bare report from others, they do alſo carry great probability with them. But now from the horſe to the rider.

25. *A ſpeedy or preſent drink which Travellers may make for themſelves* (ex tempore) *when they are diſtreſſed for want of good beer and ale at their Inne.*

TAke a quart of good water, put thereto five or ſix ſpoonfuls of good *aqua Compoſita*, which is ſtrong of the Anniſeeds, and an ounce of ſugar with a branch of roſemary, brew them a pretty while out of one pot into another, and then is your drink prepared. Or if you leave out ſugar it will be pleaſing enough. I have been credibly informed, that divers Gentlemen of good credit when they travel abroad, and cannot like the taſte or reliſh of their drink, that they uſe no other then the aforeſaid compoſition, and find the ſame both to refreſh and cool them very well; neither are they troubled with the rawneſſe of cold water, by reaſon that it hath received ſome correction from the *aqua compoſita*, and that the anniſeeds do give a delicate taſt unto it. It were not amiſſe for all ſea men to carry ſome ſtore of *aqua Vitæ* with them, that when their wine, cider, perry, and beer are ſpent, they may tranſmute their water into the ſaid drink.

26. *How any may ſafely put his finger or hand into melten lead without danger of burning.*

TAke of Quick-ſilver 1 ounce, Bole Armoniack of the beſt 2 ounces, Camphire half an ounce, common *aqua vitæ* 2 ounces, firſt beat, and then mingle all theſe wel together with a peſtle in a brazen mortar, then anoint your hands all over throughly well with this ointment, and be ſure that your hands are clean without itch or ſcab. I did ſee a Dutchman called *Hance*, a pretty nimble Chymiſt, who after he had ſet ſome lead on the fire in a melting pot, till it became blewiſh and exceeding hot, he ſtirred the ſame with his forefinger up and down, pretending to ſee whether it were not too hot to indure in the palm of his hand, and afterwards telling his fellow that it was of a good temper, he cauſed him to pour the ſame out being ſome half pound in weight into the palm of his hand, firſt prepared as before, and preſently he poured it into the other hand, and ſo out of one hand into another 5 or 6 times together, till in the end he threw the ſame cold upon the ground. This he did for a pot of the beſt Beer, in a garden in Southwark about 10 or 12 years ſince, in the preſence of my ſelf and divers others, at which time I writ the receit even as I did both ſee him make it, and uſe it my ſelf, diſburſing the charge both of Beer and the ingredients.

27. *How any man may hold a hot iron Bar in his hand without burning his fleſh.*

DIp your hand in molten glew (take heed the glew be not too hot) and preſently ſtrew the powder of horn burnt to aſhes upon the glew, then dip your hand again in the glew, & ſtrew more of the ſaid powder thereon. Note that the thicker your bar is, the thicker cruſt you muſt make upon your hand.

This

This I learned of an old and skilfull man that yet liveth, and assured me that he had made often triall thereof. *Qre.* if this be not a good device to defend Mantle-trees, and other pieces of timber that stand near the fire, from burning. Take an equal proportion of fish-glew, and alom, mingle them wel together, the glew being first dissolved in wine vinegar, then parget over whatsoever thou wilt with this composition, and throw the same into the fire, and it shall not burn. This out of the secrets of *Wickerus* 110. See *Cardane de rerum varietate*, 644.

28. *Sweet and delicate Cakes made without either spice or sugar.*

SLice great and sweet Parsnip roots (such as are not seeded) into thin slices, and having washed & scraped them clean, then dry them and beat them into powder, searcing the same through a fine searce, (*Qre.* if there might not be some means found out for the grinding of them, whereby to make the greater riddance of quantity,) then knead two parts of fine flower with one part of this powder, and make some cakes thereof, and you shall find them to taste very daintily. I have eaten of these cakes divers times with very great good liking.

29. *How with one candle to make as great a light as otherwise with two or three of the same bigness.*

CAuse a round and double glass to be made of a large size, and in fashion like a globle, but with a great round hole in the top, and in the concave part of the uppermost glasse place a Candle in a loose socket, and at some hole or pipe which must be made in the side thereof, fill the same with spirit of

wine, or ſome other clear diſtilled water that will not putrifie, and this one candle will give a great and wonderful light, ſomwhat reſembling the ſun beams Note that this glaſs is not much unlike to thoſe wine drinking bowls that have falſe bottoms, wherein Sack, or Claret wine may be conveyed with fair water onely in the uppermoſt part of the cup; wherby a plain meaning man may eaſily be deceived. This conceit of a Candle, a Gentleman of good acconnt, and my eſpecial good friend did learn in Venice, where he was ſhewed the ſecret for a few French Crowns. *Qre.* What light a candle would ſhew if it were placed in a large Cilinder like unto a half Lanthorn, all of Latten kept bright and gliſtring, the ſame being inwardly garniſhed with divers ſteel looking glaſſes, ſo artificially placed, as that one might reflect unto another. I knew an expert Jeweller, dwelling (whileſt he lived) in the Black Friers, who had a glaſs with a round belly, and a flat back ſtanding upon a foot, with a Lamp placed ſo at the backer part thereof, as that the light thereof was juſt oppoſite to the center of the belly, through which, the glaſs being firſt filled with ſpirit of wine, there would ſo brim and glittering light appear, as that by the help therof he would grave any curious work in gold as well at midnight as at the noon day.

30. *How to make great poſts and pieces of Timber that are to be driven into the earth, or piles for water works, to laſt much longer then otherwiſe they would.*

I Have heard that the Venetians whoſe houſes do ſtand upon piles of wood, do uſe to burn or ſcorch the timber in a flaming fire, continually turning it round

round with ſome engine, until they have gotten a black and hard coalie cruſt upon it, and ſo they find it to laſt ſome hundreds of years, as it hath been reported unto me. A Kentiſh Knight of good worth did alſo aſſure me, that they uſe to burn in this manner the ends and points of their poſts, which they drive into the ground, when they make their pales, and other incloſures. This ſecret carrieth great probability with it, for that by this means the outward part of the wood is brought both to ſuch a hardneſs, and likewiſe to ſuch a drineſſe, *ut, cùm omni putrefactio incipiat ab humido,* for want of moiſture and ſappineſs, neither the element of earth, nor yet of water, can make any penetration into it.

31. *To make all the chops and clefts of green Timber to cloſe again.*

ANoint or ſupple well the green Timber which you do expoſe into the aire, with the fat of powdred beef broth, and ſoak it well with the ſpunges or penſils into the clifts or chops thereof; do this twice over, and you ſhall find the ſame to anſwer my report. Some Carpenters do uſe to cloſe up the great chops of wood, with greace and ſaw-duſt mingled together, but the firſt I take to be the better way, for that I have thereby ſeen the timber to come ſo cloſe together, as if it had never been wind ſhaken at all. But note, that the Timber muſt be thus prepared in time, and whileſt it is green.

32. *How to grave any arms, poſies, or other device upon an egg ſhel, and how to through cut the ſame, with divers works and fancies, which will ſeem very ſtrange to ſuch as know not the manner of the doing thereof.*

Dip

DIp an egg in ſuet being molten, firſt the one half, and then the other, holding the ſame between your thumb and forefinger when you dip it; let the ſame cool in your hand, and being cold, with a ſharp bodkin, or ſome other inſtrument of iron, work, or grave in the ſuet what letters or pourtraicture you will, taking away the ſuet clean, and leaving the ſhell bare at the bottom of your work. Then lay this eg thus ingraved in good wine vinegar, or ſtrong alligar, in a glaſs or ſtone Pottinger, for ſome 6 or 8 hours, or more, or leſs, according to the ſtrength and ſharpneſſe of the vinegar; then take out the egg, and in water that is bloud warm, diſſolve the ſuet from the egg, then lay your egg to cool, and the work will appear to be graven in the ſhel of a ruſſet colour. *Sæpius probatum.* And if the egg lie long enough in the vinegar, after it is ſo graven and covered with ſuet as before, the letters will appear upon the egg it ſelf, being hard ſodden. Or elſe, if you care not to loſe the meat, you may pick out the ſame when the ſhell is through graven, and ſo you ſhal have a ſtrange piece of work performed. Theſe two latter conceits I learned of late, but I have not proved them: yet in all likelihood they ſhould ſeem to be true.

33. *An appearance of ſtrange forms in a glaſſe.*

GRind an Angel weight of fine leaf Gold with two ounces of *Sal Armoniack* upon a marble til you can ſcarcely diſcern any Gold; then take two parting Glaſſes, each of them containing a pint, in the one put the ground Gold with four ounces of good ſtrong water, and in the other glaſſe put four ounces of Mercury with 8 ounces of *aqua fortis*, ſet both theſe

theſe glaſſes in warm aſhes upon ſome furnace, till both the bodies be diſſolved: then take a parting glaſs of a quart, and whileſt the ſubſtances being diſſolved are yet warm, pour the ſame into your qnart glaſſe, but firſt you muſt put in your ſtrong water wherein the Mercury was diſſolved (I write according to the practiſe which I did ſee) and then pour the other water upon that, and preſently you ſhall ſee an extream-thick blackneſs, which a Dutch Alchymiſt and practiſer of Phyſick, that died of the laſt years plague (upon the diſcovery thereof) would maintain to be that *nigrum nigro nigrius*, ſo much ſpoken of amongſt the Philoſophers; and after a while, when the water began to be clear, then he termed it *cælum chriſtalinum*; after that did appear a continual riſing and falling as it were of flakes of ſnow, which continued certain hours; and then as it were a hil all covered with pearl, and that he called *ſepulchrum Moſis*. All which compoſition having ſtood one night, there appeared divers ſpires like blades of corn or graſſe, but of a whitiſh color in the bottom of the glaſs: yet in the end, by a reverberatory furnace, he turned all this great matter into a precipitate; and therefore it muſt needs be a Philoſophical work that did end in ſo great an *arcanum*. Yet the ſame if it be truly performed, is worth the beholding, if it were to no other end, then to put us in mind of *Democritus* his *Atomi*, which concurring together, at length engender bodies. There is a like work to be performed in ſilver, whereby I have ſeen ſeveral forms and ſhapes of things ſometime to ſpring up ſuddenly, and ſomtimes in a night or two, the ſame ſometime repreſenting trees, ſhrubs, hedges, and flowers, and divers other ſhapes: and notwithſtanding many practiſes to

find out the reaſon of the differences of theſe forms, I could never yet make any one form twice, but that nature would play ſo infinitely, and at her own pleaſure herein, as though I did obſerve a juſt proportion of all the ingredients of this magiſtery, yet (becauſe ſhe found ſome difference of peize when ſhe weighed them in her own ballãce) I had always a ſeveral & differing form from the laſt which I made.

34. *A portable Ink, to be carried in the form of a powder, in any paper, leather purſe, or box.*

IN Foſter-lane, or among the refiners of gold and ſilver, get a large pan, ſuch as they make their teſts of bone aſhes in; it is a deep diſh made of burnt clay: into this put ſo much of the beſt and fatteſt coppres that you can get, ſet the ſame upon a trever over a reaſonable fire of charcoal: at the firſt it wil diſſolve into a water, and after by continuing of your fire it will grow dryer and dryer: ſtir the ſame continually with a wooden ſpattle into the midſt of the pan, and keep it from burning or hardning to the ſides of the pan; and when it is throughly calcined into a whitiſh powder, and before it become red, take it from the fire: Then weigh out of this calcined coppreſs one part, one part of the beſt gals wel powdred, and half a part of the cleareſt gum *Arabick* well powdered alſo; ſearce them all through a fine ſearce, the finer the better, and it will not be amiſs if you uſe a lawn ſearce herein. Keep this powder in cloſe boxes, and in the warmeſt places of your houſe; and when you will write therewith, put ſome of the powder into a ſpoon, adding thereunto ſome water, wine, beer, or vinegar, and ſtir it well together a pretty while, and when

when it hath ſetled a while, you may write therewith, and as it drieth it will grow blacker and blacker upon the paper, till in the end it become very legible. This I have often proved. Some commend dry Litmas ſcraped in water, and forced with a ſolution, wherewith to write inſtead of blew ink. But I think it not amiſſe firſt to diſſolve gum Arabick in the water, to keep your ink the better from ſinking. Theſe ſorts of inks are very good for the ſea, becauſe glaſſes are ſubject to breaking, and though you put your ink in leaden pots, yet in time it will thicken exceedingly, and then every man knows how troubleſome it will be to the writer. I could here ſet down ſome other ſorts of ink that be not common, whereof ſome wil fall from the paper in a few days, and others would corrode or fret the paper in pieces, but becauſe I know but one good uſe of them all, and for that I fear ſo many bad uſes, or rather abuſes, would follow if they were known and made common, I will rather ſeem ignorant of them, then become an author or helper unto bad men in their bad purpoſes.

35. *How to write both blew and red letters at once, with one ſelf ſame ink and pen, and upon the ſame paper.*

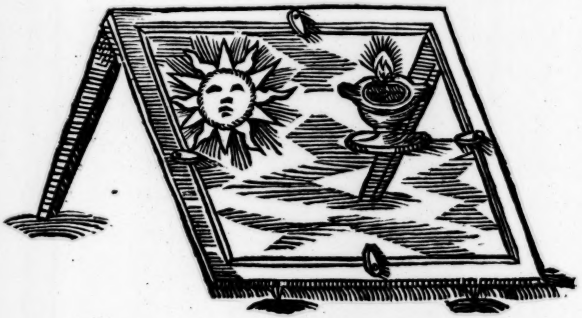
PUt the quantity of a Haſel nut of Lytmas blew to 3 ſpoonfuls of conduit water, wherein ſome gum Arabick is diſſolved, and when it hath ſetled the ſpace of one hour, if you write therewith you ſhall have perfect blew letters, and if you dip a penſil in the juyce of Lymmons, that is drained from his reſidence, and do wet ſome part of the paper

therewith, and after let your paper dry again, and then write upon the place where the juyce of the lymmon was laid, with your former blew ink, the letters will ſuddenly become red, and in all the reſt of the paper the letters will be blew. And ſo you may alſo make party letters and other fancies, if you wet your paper accordingly. *Sæpius probatum.*

36. *To keep ink from freezing and moulding.*

Put a few drops of *aqua vitæ* therein, and then it will not freeze in the hardeſt winter that can happen, and in Summer time if you put ſalt therein, it will not wax mouldy, as I have been credibly informed.

37. *How to draw any groſſe pattern of any beaſt, fowl, Tree, Fruit, Flower, Perſonage, or other picture whatſoever.*



YOu muſt have a desk of the cleareſt and eveneſt glaſs that is to be bought, yet I have ſeen our Suſſex glaſs to ſerve the turn ſufficiently (and ſome uſe the skin of an abortive Lamb, finely dreſſed and ſtreined ſtiff upon a frame) upon this desk you muſt faſten the pattern at the four ends with a little wax, upon which pattern lay the fineſt paper you can get for money, and wax that alſo upon the pattern as before. Then place your desk with the back thereof againſt a brim or perfect light, that hath no other oppoſite or ſide light to hinder it, and I think it beſt of all againſt a window where the ſun ſhineth) and the patern wil ſhew all the lineaments thereof very perfectly through the fine paper, upon the which you may trick, either with a fine pointed cole, black lead or pen. *Qre.* Of a ſufficient light to be placed under the desk by ſeveral lamps, if thereby alſo in a dark night, you may not diſcern how to perform your work perfectly.

Some inſtead of this desk do oil a paper and lay it upon a pattern, and draw thereon with black lead, and then prick the pattern full of holes and pounce it upon another paper. And ſome have patterns of beaſts, birds, flowers, &c. prickt out in paper, and thoſe they pounce alſo upon other paper. And this is a good and ready way for him that is not skilfull in the art of drawing, to garniſh any plot which he had taken of any Manor, Park, Cloſe, &c. with trees hedges, deere, houſings, &c. But there is a way by a perſpective glaſs (which becauſe it is conſecrated to art, I dare not prophane the ſame too much by delivering it into unhallowed hands) whereby a young ſcholler may in 1 hours demonſtration exactly draw and ſet down the lineaments of any live perſonage,

beaſt, or other fowl whatſoever, being placed at any reaſonable diſtance from him, and ſo of any ſtately edifice or building, fort, bulwark, or fortification, and of all manner of engines, whatſoever the wit of any work-maſter is able either to actuate in the great or perform in the model onely. Yea all manner of drawn patterns whatſoever, be they never ſo great, may by the help of this glaſſe (whereof I have gotten the uſe at the hand of my dear friend) be leſſened and brought within as narrow a Compaſs as a man would reaſonably wiſh or deſire. And whoſoever ſhall adviſedly practice by the help of this glaſs, may in one months ſpace be able to draw any patern by hand onely, without having need of the ſame any more. So likewiſe it is poſſible by way of reflexion, for any man to behold in a looking glaſſe, and that alſo in his private ſtudy, all the geſtures and actions whatſoever any perſon ſhall make or perform, in any room or corner of his houſe, as alſo to ſee in the bottom of his ſeller whatſoever is done on the top of Pauls ſteeple, or any other ſteeple within London, ſo as his dwelling be within the City, or the liberties thereof, or within any competent number of miles diſtant from the ſame. But becauſe I do ſee that every author is in danger to be cenſured according to the particular judgement of every Reader, and becauſe *Stultorum plena ſunt omnia*, I will not extend the credit of this ſecret to its uppermoſt bounds, but this ſhal be ſufficient for the weak faith that reigneth in the world at this time.

38. *Some helps for the ſpeedier and true making and breaking of any letter, as alſo how a learner may write ſtreight, and give ſome pretty grace unto his letters.*

For

FOr the ſpeedier attaining to any written hand, let ſome perfect writing Maſter deliver a few copies written, or rather broken in this manner. Let him divide or break each Letter into ſo many parts as he hath cauſe to make any little pauſe or addition before he fiſh the ſame; which is nothing elſe but the undoing and diſ-joining of the ſame, that a young Scholler may the better ſee which way the ſame was made up and brought together. As for example, the Secretary ſmal a, hath ſix parts before it be made up, the b. c. and d. have four, and ſome more, and ſome leſſe: And for the better underſtanding of my whole meaning, I would have cauſed the whole Alphabet to have been cut, and ſo Printed in this manner, but that I could not ſtay the doing of it, and alſo for that I knew any Maſter of the ſcience will perform the ſame with his pen, to any that ſhall be willing to requite his pains. Alſo it giveth a great grace to your writing, if the whites of certain letters be made of one equal bigneſſe with the o. ſuppoſing the ſame were all round, as the white of the b. of the a. p. y. v. w. x. q. d. g. and e. And for the writing ſtraight, and true breaking of the letters, cauſe a paper to be ruled all over with great lines, drawn with a text pen, upon which ruled paper you muſt lay a leaf of the fineſt paper that can be gotten, ſuch as they do commonly ſell for two ſhillings four pence the quire, and let the ſcholler write upon the ſhadow of the text lines; or elſe if the neather paper be ruled full of ſmall lines, when he writeth upon fine paper, let him have care, that thoſe ſmall lines may cut or divide thoſe letters that he maketh, in the midſt, and he ſhall find great uſe thereof. Some draw the letters firſt in black lead

or

or red ink, and then let their ſchollers run over them with black ink, until they have brought their hand in ure, with the ſhape and faſhion of the letters. There is no doubt but that ſome willing and careful ſchollers will find ſome of theſe helps as good as the Ace of Hearts in their Writing; though other heedleſſe Drones will ſcarce make the Ace of Diamonds of the beſt means that any Maſter or Teacher ſhall diſcover.

39. *A Gall water, very neceſſary to mingle with your Ink, as it groweth thick in your Standiſh or Inkhorn.*

SLice or beat ſome of the beſt galls, and put them in a glaſs of fair water, and when they have given ſome reaſonable tincture to the water, you may mix the ſame with your ink as it thickneth: this is a more kindly way, then to uſe either fair water, beer, or vinegar inſtead thereof. But when the water begins to be over old, and out of date, you muſt then throw away the ſame, and make freſh.

40. *How to renue old letters that be almoſt worn out of date.*

THis is performed by rubbing them over carefully with the gall water aforeſaid, being well prepared, for that wil ſtrike a freſh hue again into the old and outworn coppreſs. Theſe two ſecrets I learned very lately of a skilfull and well conceited Gentleman, who hath made ſome practiſes thereof himſelf, and the firſt I can warrant by my own trial.

41. *How to ſpeak by ſigns onely without the uttering of any word.*

DEviſe 24 ſigns, whereof every one may repreſent ſome one of the 24 letters, but place your vowels for the more readineſs in this manner; firſt A on the tip of your thumb on the left hand, E on the tip of your forefinger on the ſame hand, and ſo of the reſt; ſo as when you lay the *index* or forefinger of your right hand on the tip of your thumb on the left hand, the party with whom you ſhall confer in this manner, may always note the ſame for an A. The reſt of the letters which be conſonants, may be underſtood by geſtures, countenances, or actions, as an hem for a B, a croſs made on the forehead for a C, a fillip for a D, and ſo of the reſt. *I* have ſeen a Gentleman togeth̃er with a Gentlewoman that were very ready in their conceited Alphabet, to deliver their minds to each other in this manner, whenas not any of the ſtanders by underſtood either word or letter of their meaning. And *I* hold the ſame a neceſſary art to be practiſed of ſuch as naturally lack their ſpeech, by which they may be underſtood of others, which otherwiſe could have no natural cõference with them.

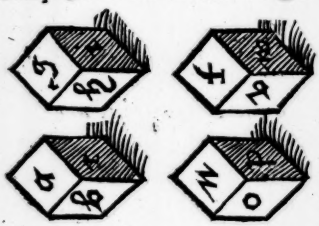
42. *How to paint or lymn with the colours that are taken from herbs and flowers.*

SOme dry the leaves of herbs or flowers, which carry any deep colour in them, and if there be ſeveral colours upon one leaf, they divide them, and keep each colour by it ſelf, grinding the ſame upon a Marble, and after keep it in cloſe glaſſes or leaded

pots, ſufficiently defended from the air. If you grind the leaves of a white roſe with a little allom, it will give a yellow colour, and ſo will the purple part of the leaf of the flower de luce, ground with a little lime, yeeld a good and perfect green. Some expreſs the juyce of herbs or flowers, and then evaporate either in balneo or in the ſun ſo much as will aſcend, ſpreading the reſt thinly on the bottoms and ſides of ſmal diſhes, and after they ſet the ſame in the ſun to dry, and then grind it with gum water as they have cauſe to uſe it. Some infuſe the moiſt, and ſome the dry leaf with fair water, and ſo ſoon as the beautiful hew of the leaves begin to vade, they drein away the water and make an addition of freſh leaves thereunto, and ſo change their leaves often, that they may purchaſe to themſelves nothing but the lively and bright tincture of every herb or flower.

44 *A ready way for children to learn their A. B. C.*

CAuſe 4 large dice of bone or wood to be made, and upon every ſquare, one of the ſmal letters of the croſs row to be graven, but in ſome bigger ſhape, and the child uſing to play much with them, and being alwayes told what letter chanceth, will ſoon gain his Alphabet, as it were by the way of ſport or paſtime. I have heard of a pair of cards, whereon moſt of the principall Grammer rules have been printed, and the School-Maſter hath found good ſport thereat with his ſchollers.



44. *To grave and inlay colours into* Sol, Luna, Mars, *or* Venus, *to ſhew in the nature of an Ammel.*

FIrſt cover your mettal with a cruſt of wax, and with a fine ſharp tool when the ſame is cold, cut out the ſhape or proportion of what letters or other portraiture you pleaſe, and of ſome reaſonable largneſſe, then pour ſome ſtrong water into thoſe empty places, and when you find them deep enough graven, mingle Orpiment and Maſtick melted together for a Yellow colour, and Vermillion with Maſtick for a Red, and ſo of all other colours. Now when your Maſtick hath been molten together with any of the aforeſaid colours, let it cool, and beat the ſame into powder, and lay of that powder within the graving, and after lay the mettal upon the fire, till the Maſtick melt, and it will remain faſt and firm therein a long time. This of a Jew that yet liveth for ought I know.

45. *To make bad paper bear ink in ſome reaſonable manner.*

RUb your paper well over with the fine powder or duſt of Roſen & Sandrach mingled in equal parts before you write therewith. Note that you muſt tie the powder hard in a rag of Lawn or thin Cambrick, and therewith rub the paper throughly well. This is a neceſſary ſecret for ſtudents, whereby they may note in the margents of their books, if the paper ſhould happen to ſink, which is an eſpecial fault in many of our late years books.

46. *To make an egg to ſtand upon an end without any help at all.*

THere is an old tale of a good Workman who made an egg to ſtand in ſalt upon an end; but here the ſame is more artly performed, and yet without any ſuch ſupportation. Hold an egg in your right hand, and with your fiſt give three or four good ſtrong blows upon your left arm, or uſe any other deviſe by agitation or ſhaking, until you have broken the yolk, and ſo made the white to mingle confuſedly with it, and then it will preſently ſtand on the broad end on an even table. It ſhould ſeem, that before the breaking of the yolk, the yolk did hang playing or tottering within the white, whereby the the egg could not be made to ſtand ſpeedily without this deviſe. And yet I heard a Gentleman, whom I dare beleeve in a greater matter then this, affirm, that he hath divers times cauſed an egg to ſtand alone by peizing it to and fro between his hands, till in the end it ſtood upright without any other help. But the firſt is the readier way.

47. *To harden the white of an Egg into an artificial Gum.*

BEat the Whites of divers Egges into a thin and clear oyl or water; put the ſame into bladders, and hang them in your Kitchin chimney, where a fire is uſually kept in the day time, and in a few days the ſame will become as hard as gum Arabick. This I have often proved. Some perform the ſame in the ſun onely. *Qre.* to what uſe this gum will ſerve.

Mr.

Mr. Wickes in his book of Secrets, *fol.* 532. ſets down the ſundry effects wrought by the ſeveral degrees of fire; where we ſee a continual hot fire doth roaſt an egg till it become extream hard, but yet the nature of food remaining; an intermiſſive heat brings forth a gum altogether unfit for nouriſhment; and a gentle or natural heat engendreth a chicken that is good meat, but not before it hath received ſome alteration by an outward and elemental heat. I will not urge this Philoſophical point of fire any further, only I wiſh, that he that is a true maſter of this element were my maſter alſo for a time.

48. *A Cheap Candle or Lamp for the poorer ſort to uſe in their houſes.*

Dip candle week in molten roſen, then wet your hands in water, and after you have dipt every week, you muſt ſtretch it out at length, or ſtraighten it between your fingers, and ſo lay them to cool upon a half pace or floor of ſtone. I think the refuſe of old ropes and cordage would be a very profitable week for this purpoſe. This concluſion although it have been in ſome ſort already publiſhed by mean perſons both in Town and Countrey, and given over by the inconvenience of the exceſſive ſmoak onely, which annoieth the whole room exceedingly wherein it burneth; yet me thinks that during the dear price of tallow candles, the poor might make ſome ſhift or other with them, as either by ſetring the candles within the Chimney, or elſe in a candleſtick over the mantletree, with a large wide tunnel made of wicker, and covered with paper, and having an elbow which might paſſe through ſome large hole in-

to the chimney whereby the ſmoke may be avoided. Theſe candles I know will not exceed half the price of the worſt week candles that are to be bought. But for thoſe that can content themſelves with the light of a Lamp (and I am ſure the ſame will ſerve for watching candles, and yet be more eaſier in price) let them buy Rape Oil, which for the moſt part may be had after two ſhillings the gallon, and therewith maintain their Lamps, uſing a ſmall week of a few folds onely, or rather a Candle ruſh in the ſocket of their Lamps, and ſo they ſhall find that one pint of oyl wil laſt them an hundred hours, whereas a pound of watching candles will be ſpent in threeſcore, or threeſcore and ten hours at the moſt, and yet they are dearer by one peny in the pound. Note that the week or ruſh muſt ſtand a litle ſloping in the noſe of your Lamp. Or if you would uſe your Lamp inſtead of a watching candle, and to maintain a light onely, then may you take a pretty large beer glaſſe, placing your week upon wier, being placed like a trefoil in the bottom, the wier it ſelf being firſt thruſt through a little round flat piece of Lead of the bigneſſe of a two peny piece of ſilver to make it ſtand the ſteadier. The week muſt be faſtned to the wier with a thred of Cotten loſely bound about it. When you have placed this week in the midſt, then pour in either oyl or ſuet round about it, and ſo kindle your Lamp, & it will give ſome light alſo through the glaſs. Note that your glaſs may not be too large, leſt that the week grow to a coal before the oyl can conſume away faſt enough to give it paſſage unto freſh week thereby to maintain the light the better. But if you would have your lamp to laſt the longer, but to give no light at the ſides, nor greatly at the top, then ſet your

your glaſs in a deep baſon or pot of water, thereby to keep the oil the cooler, and ſo it will alſo laſt the longer. And it is not amiſs, nay it is very requiſite to put in ſome water into your glaſs before you put in the oil, thereby to keep the oil from burning. Neither can I here omit or paſſe over in ſilence that one more ſpecial uſe of a Lamp than any candle can afford, which is the ſafety of your light from being carried to and fro in the night time with rats and mice, which have often times ſet mats on fire with the flame of a candle, as they have ſought to convey it into their neſts. Neither would I willingly ſtudy by any other candle, becauſe it continues ſo long in one equal light, without giving that offence to the eie which the candle doth, by his preſent light after it is newly topt; if it were poſſible to have ſtore of that oil of Beechmaſt (which a late writer doth undertake to perform in great quantity from the nut, & which I have known expreſſed in England, but not with ſuch yeeld, the difference whereof, may peradventure be found in the diſtinct natures of the Engliſh and the Naple nut) or of that *Oleum Palmæ*, which is taken at this day to be the oil that iſſueth out of the Date-tree, the burning whereof is moſt ſweet and delicate in a Lamp, as I can teſtifie by the trial of it ſundry nights wherein I uſed no other watching candle in my bed Ghamber. Let this ſuffice to have ſpoken of Lamps for this time, and untill I may obtain more leiſure & more liberty, to lighten a new Lamp that will give more light then a Creſſet, in ſome of the darkeſt corners of this land.

49. *How to refresh the colours of old pieces that be wrought in Oyl.*

SOme use to beat the dust off them with a Fox tail, or with a brush of feathers, and after rubbing them over with a Spunge or warm Urine. This way was commended to me by M. *Bateman* sometime Parson of Newington, a man whom for divers good parts that were in him, I can never sufficiently commend. Others rub them over lightly with a Spunge and fair water, and after there commeth no more soil, then with a Spunge and good old Linseed oil, wherein sometimes for the speedier drying, they do put some burnt Allom or powder of glass finely ground. Some do use first to wash over the pictures with soap, and presently after they be dry, to vernish them over. Note that all this is intended in pictures not vernished before. *Vide postea, Num.* 72.

50. *An excellent cement for broken glasses.*

TAke one part of Virgin wax, and two parts of the tears or clear drops of Mastick, and cement therewith. But the better way is, if you beat the whitest fish glew you can get, with a hammer till it begin to wax clear, and cut the same into very small and short pieces, suffering the same to dissolve upon a gentle fire in a little leaded pan with a few drops of *Aqua vitæ*. Then let some other that stands by, hold both the pieces that are to be cemented over a Chasing-dish of coals till they be warm, and during their heat lay on the dissolved glew with a fine pensil, then bind the glass with wire or packthread, and let it rest till

till it be cold. With this cement I did ſee a Dutch Jeweller (dwelling in Black-Friers, but ſince departed this world (cement two of her Majeſties chryſtal cups that were broken. Some comend unſlak'd lime, wheat flowr, and the white of an egg. Others do like fiſh-glew, with *aqua vitæ* and ceruſe; or with the tears of Maſtick, *aqua vitæ* and ceruſe. A ſingular workman did highly commend unto me, Rheniſh wine, and Iſinglaſs or fiſh-glew for this purpoſe.

51. *How to dry Gunpowder without all danger of fire.*

ALthough I hold not this for any great ſecret, yet becauſe there hath much miſchief & ſpoil of men happened onely by the wretchleſs drying of powder, I have thought it requiſite and neceſſary in that reſpect, and for the prevention of dangers to come, to publiſh the ſame. Cauſe then a veſſel either of Lead, Pewter, Latten, or Copper, to be made, having a double bottome, between which bottomes you may convey ſcalding water at a pipe, which water may alſo be heated in another room, for the more ſafety againſt the fire; and then you may lay your powder upon the uppermoſt bottome till it be dry: and when the water beginneth to cool, you may let it out at a cock in the bottome of the Veſſel, and ſo give paſſage for more ſcalding water into the veſſel by another cock which may be faſtened in the pipe that runneth into the veſſel. Or having a little pipe in the ſide, you may from time to time with a funnel pour in ſcalding water at your pleaſure; and this is done both with leſſe coſt, and alſo leſſe circumſtance. I do uſe when I would dry my powder in haſt, to heat a fire ſhovel by diſcretion, and then

I lay a paper thereon a pretty while, and if I ſee that the paper burn not, nor take fire, then I do ſpread my powder upon the paper, ſtirring it up and down till it leave ſmoaking: and this I have always found to be a very ready and a ſafe way. Some dry their powder in a ſtove, where no fire can come near to indanger it.

52. *To draw fiſh to a certain place in the night time, by a light or candle.*

PUt ſo much filed lead into a Urinal as wil make it ſink, and upon the lead ſtrew ſome herbs, and upon thoſe herbs ſome Glo-worms, cover the glaſſe with a cork, and lute it well; and about the neck of the Urinal tie a ſtring, which muſt be put through a great cork, that may keep the Urinal ſwimming in the water at what depth you pleaſe. Note that with ſome pipe or quill, you muſt convey ſome air into the glaſs, for elſe the Glo-worms will die, and then I think their ſhining brightneſs will vaniſh away; and therefore thoſe perpetual lights are meerly fabulous and fantaſtical, that are drawn from theſe diſtilled worms and Mercury together. Some nip or lute a glaſs having crude Mercury therein, and ſo hang it in the water as before. Alſo a candle held either even with the water, or ſunk a little way into the water, will amaze and draw the fiſhes unto it, ſo as if you have a little hoop net, upon the end of a cane or pole, you may eaſily take them, and bring them to the brink-ſide. All theſe experiments are beſt performed in a dark night.

53. *A bait to catch fiſh with.*

To

TO half a hot half penny white loaf, take one ounce of Cockle ſeed (*Qre*, if *Coculus indiæ* be not better) one ounce of Henbane ſeed finely powdred temper the ſame wel with ſtrong *aqua compoſita* into a paſt, then divide your paſt into ſmall pieces of the bigneſſe of a grain of wheat, and caſt in a handfull of them at once, ſomewhat above the place where the fiſh do haunt, if it be in a river. This ſerves eſpecially when you ſee the fiſh to float, but for the cheven you muſt make your baits as big as cherry ſtones, and put them in little coffins of paper, & then throw them upon the water. This ſecret I have not proved.

54. *How to drive fiſh into a Tramel.*

PItch a tramel overthwart a river where there is good ſtore of fiſh, then go upward againſt the ſtream a pretty way from the net, and as you come downward again with the ſtream, throw in ſome lime ſtones here and there diſperſedly, on both the ſides of the river. Theſe unſlak'd limeſtones wil make ſuch a crackling in the water, that no fiſh dare return back again upon them, but will run forward and maſh themſelves in the tramel. This I had of *Iohn Heſter*, one of the moſt ancient chimiſts of my time in London, in exchange of one other ſecret which I diſcloſed unto him. Yet ſome be of opinion that you muſt hurle in whole handfuls at once now and then, whereby the fiſh hearing ſo great noiſe, and taſting the ſtrength thereof in the water, may be the more affrighted.

55. *Divers good baits to catch fiſh with.*

FIll a sheeps gut with small unslak'd limestones, and tie the same well at both ends that no water get therein, & if any pike devour it (as they are ravening fish and very likely to do) she dieth in a short time, you may fasten it to a string if you please, and so let it flote upon the water. Also the liver of every fish is a good bait to catch any fish of the same kind. Past made of wheat flower, a little saffron and some sugar, and tempered with water, is a good bait to angle withall for roch, dase, *&c.* Also if you gather dunghil worms, or from under a block, and take the earth from them, and put them into fine clean mos, suffering them to scour themselves three or four days therein, the fish will bite the better at them.

56. A ready way to catch Pigeons and other great birds.

MAke smal coffins of paper, (such as the confit-makers use to put their confits in) not exceeding the length of ones finger, past the sides and ends with some starch, clip the upper part of them round with a pair of sheers, then anoint the inside of the uppermost skirts of them round about with birdlime in the form of a ring, and after you have procured the Pigeons to haunt a place, by making of a shrap a day or two before, lay of these coffins here and there with a few pease in every one of them a little sloping or declining, and strew some other pease amongst them. And when the Pigeon pecketh at the pease within the coffin, she is immediately masked or hooded, not seeing which way to flie. And so you shall find very good sport to take them easily.

57. *A*

57. *A worm to catch birds with.*

THere is a great opinion conceived of a Worm that hath many feet, and is found in a horſe-mil, where corn is ground, moſt commonly under the ground where the horſe treadeth, and is exceeding ſweet; place this worm with limetwigs about her, where ſhe may be ſeen, and you ſhal ſoon take birds therewith. But I take this rather to be the Worm wherein the Nightingale doth ſo much delight, which is found in a mil-caſe, or where Bakers uſe to bolt their meal.

58. *How to catch Pigeons, Crows, Iack-dawes, and Mag-pies.*

FOr the taking of Pigeons, you muſt make a ſhrap three or four days together, laying looſe lines amongſt the peaſe untill the Doves be acquainted therewith, then in ſome evening tie at thoſe lines great ſtore of ſtrings, which with a needle before you muſt thruſt through the peaſe, being firſt ſodden ſoft for the purpoſe, and at the end of every ſtring tie a little knot, when a Pigeon hath ſwallowed down one of theſe peaſe, together with the ſtring, ſhe cannot poſſibly get it up again, but ſhe is eaſily taken. Perhaps ſome other birds may alſo be taken in this manner. It is not amiſſe to hide the thread near the Peaſe with graſſe, earth or ſtraw, or ſome ſuch like matter. Alſo if you throw gobbets of fleſh or cheeſe curds abroad in the fields where there be ſtore of Rooks, Crows, Daws, or Mag-pies, within the which there is conveyed ſome of the powder of Arſenick or

ſublimate, yon ſhall ſoon diſpatch your barns and other Garners of corn, of all theſe waſtful birds. But take heed that none of your hogs do eat of theſe dead birds, leſt they happen to poiſon them alſo.

59. *How to kill Sea-pies, Sea-guls, and other ravening water fowl.*

SOme be of opinion that if in the winter time, you do ſtrein overthwart a river or brook, where Fowl do haunt ſome ſtrong line or whipcord, at the which you may alſo hang divers other ſmaller threads, baited with garbage upon hooks, of an apt ſize for them, that ſo they will hang themſelves, and be eaſily taken. Alſo for the taking ſtore of ſea-pies, you may lime ſome twigs which may be faſtened at ſmall fiſhes, and then lay the ſame upon large leaves, ſo as the lime touch not the water, and the ſea-pie ſtriking at the fiſh is taken with the lime twigs. And having taken one or two of them, then clip their wings, and ſo leave them in the water, and all the ſea-pies therabouts that are within hearing, will come to help them, and continually flie hovering over them, ſo as having your pieces charged, you may diſcharge at the whole flock as faſt as you can charge, for they will not be driven away.

60. *How to gather great ſtore of Waſps together, ſo as you may deſtroy them all.*

SOme honey put into a Pipkin, and the ſame placed over a gentle fire, the windows of the room being ſet open, will by the ſcent and vapour thereof, draw all the Waſps that are near the place within any

any reaſonable compaſſe into the room where you have beſtowed the pot. Note that this muſt be done in an apt ſeaſon of the year, when as there be ſtore of waſps, and in ſome place where they haunt greatly. Alſo the waſps will ſoon reſort to an earthen pot, wherein there is ſome raw fleſh, and when you have drawn ſome ſtore of them together into the pot, then cover it, and ſet it on the fire until you have deſtoyed them all. This latter ſecret I had out of *Cardanus de rerum varietate, pag.* 294. but the firſt is more natural, and commandeth further off. Alſo if you ſet ſtore of jarre glaſſes in your Orchard, and about your houſe, where you ſee the greateſt haunt of them, with ſome decoction of honey and water, or water and ſugar, or any other ſweet wine or compoſition in them, leaving theſe pots or glaſſes three parts empty, they wil not forſake theſe ſweet liquors until they have drowned themſelves therein.

61. How to keep garments of cloath, or hangings of Tapiſtry, Dornick, Saie, &c. from moath eating.

BRuſh your apparel with an ordinary bruſh, and ſo likewiſe your hangings; or elſe you may uſe a bruſh made of a fig frale, until you have gotten all the duſt out of them, then bruſh them over throughly well twice or thrice every year as they hang, with a bruſh made of Wormwood tops. And yet I think it to be the ſurer way, if they were alſo well rubbed with wormwood on the backſides. I have heard that it is a uſual practiſe amongſt the Italians here in England in ſummer time, to cauſe great ſtore of walnut tree leaves to be hung upon a thread, ſo as one may not touch another, and when they are throughly dry,

dry, then ſtrew them in their Cheſts and Preſſes, amongſt their cloaths and other furniture of their chambers and beds, and within the ſeveral folds of every garment.

62. To help beer that beginneth to ſour, or is dead.

SOme put a handful or two of ground malt into a barrel of beer, and ſtir the ſame and the Beer well together, and ſo make it to work a freſh and become good again. Some do bury ſour beer 24 hours in the earth, and thereby recover it. Others adde new ſtrong beer to the old, and ſo the dead beer is forced ſometimes to work again to a new head. Some fetch it again with chalk or lime, and ſome with oyſter ſhels; and ſome throw a handfull of ſalt into a barrel of dead beer. A Lady in this land hath always uſed to put in a handful of oatmeal into every barrel of beer, when it was firſt laid into her ſellar, whereby her drink did always carry with it a quick and a lively taſte. It is very good alſo to tilt your beer, when the veſſel is little more then half drawn off, for ſo ſhall you draw your beer good even to the latter end.

63. To help a chimney that is on fire, preſently.

WHen you ſee the chimney on fire, forthwith get a large thick blanket or coverlet, and with the help of two or three perſons, let the ſame be held cloſe both above and below unto the mouth of the chimney, ſo as no air may enter; and if you can come eaſily to the top of the chimney, cover the ſame cloſe alſo, either with a fit board, or elſe with wet woollen cloths, and ſo the fire wanting air will preſently go out, and be ſmothered.

64. To

64. To have ſtore of Sea-fiſh for the proviſion of ones table, without repairing to the ſea for them.

SIR Edward Hobby (as I have heard) hath ſtored certain dikes in the Iſle of Sheppey, with ſundry kinds of Sea-fiſh, into which dikes by ſluces, he doth let in from time to time, change of ſea-water to nouriſh them.

65. To make ale or beer to become ſtale in a ſhort time.

BOttle ale, or bottle beer, being buried ſomewhat deep in the ground, in a cool or ſhady place, becommeth ſtale enough to be drunken in 48. hours ſpace, as I have been informed by an honeſt and ſober Courtier.

66. How to ſteal Bees.

IF you place a Bee hive ſomewhat before ſwarming time in the midſt of a great Beech tree, ſo cloſe as that it may not be diſcerned for fear of ſtealing, the bees wil reſort unto the ſame, eſpecially if it be firſt well ſprinkled with water and honey.

67. How to make a tallow candle to laſt much longer then it doth in our uſual manner.

A Neapolitane hath written that ſalt mingled with oyl wil make it to double his laſting, but I think the practiſer hereof will find it ſomewhat troubleſome to make a good ſolution of ſalt in oyl, for oyl is an improper ſubject to retain ſalt. I have heard an Iriſh practitioner affirm, that if tallow candles be made about Alhallontide of good ſtuff, and

preſently laid in cold water by the ſpace of 24 hours together, and then hung up to dry in a cold and windy place upon their ſticks, that by this means onely they wil laſt much lõger than otherwiſe they would and burn alſo much ſweeter. But I am ſure that if there be a true counterpeize given to a ſhort tallow candle, (ſuch as is uſually called the Goldſmiths candle) and the ſame afterwards let down between ones fingers into the midſt of a pile or tub of water, ſo carefully, as that the flame be not extinguiſhed in letting the ſame fall into the water, it will laſt as long as two candles of the ſame length and bigneſs, always ſupporting it ſelf above the water by a thin cruſt or web, which it worketh about the flame in the nature of Camphire, which continueth his burning in the water (being once ſet on fire) until it have wrought a paſſage or entry for the water into it ſelf.

68. *How to tell the juſt number of apples, nuts, ſhillings, &c. as they lie in bulk together, how great ſoever the heap be.*

CAuſe the owner of them to diſpoſe of the whole heap in this manner. Firſt wil him to lay down two, then let him double that number likewiſe, and ſo continue in the rule of duplation, until he can double no longer, lay all the od ones apart by themſelves, then ſhal you eaſily gueſs by the preſent view of the whole number, how many there are in the whole heap. For either they muſt be 2, 4, 8, 16, 32, 64, 128, &c. and which of theſe numbers ſoever it be, every reaſonable eye wil gueſs, the bulk of the one number doth ſo much ſurmount the other. The like alſo may be done in trebling, and now and then in doubling or trebling, the more to obſcure the conceit.

69. How

69. *How to prevent Drunkenneſs,*

DRink firſt a good large draught of Sallet Oyl, for that will float upon the Wine which you ſhall drink, and ſuppreſs the ſpirits from aſcending into the brain. Alſo what quantity ſoever of new milk you drink firſt, you may well drink thrice as much wine after, without danger of being drunk: But how ſick you ſhall be with this prevention, I will not here determine; neither would I have ſet down this experiment, but onely for the help of ſuch modeſt drinkers as onely in company are drawn, or rather enforced to pledge in full bolls ſuch quaffing companions as they would be loth to offend, and will require reaſon at their hands, as they term it.

70. *An excellent Tent for a Diamond.*

BUrn Ivory in a Cruſible, or melting pot, being cloſe luted, into a black powder; then take a little of the fine powder thereof, and mingle it with a few drops of the extracted oyl of Maſtick, and in the ſetting of the ſtone, you muſt have care that it touch not the Tent.

71. *How to make Oyl or Verniſh to dry ſpeedily.*

THis is done firſt by boiling of the oyl to the conſumption of the one half, or one third therof, and then by the putting in the aſhes of the back-bones of Shads or Mackerel; alſo divers Shads heads dried in the wind, and hung up in a dark place, will gliſter like glow worms.

72. *A ſtrong Lee that will fetch out any ſtain, as alſo refreſh an old Oil Picture, and make it very fair again.*

TAke of the aſhes of the Vine one handfull, of white coppres and burnt allom, of each the quantity of half a Walnut, put thereto a pint of conduit water, infuſe the ſame upon the ſaid ſubſtances in an Ipocras bag, and reiterate the water upon them 4 or 5 times, til it grow very ſtrong; ſet the ſaid water on the fire, and put thereto the quantity of an haſel nut of good ſope; then take the ſaid Lee ſo hot as you may wel endure your hand therin, and after you have taken off the duſt from the picture with ſome bruſh or fox-tail, rub over the picture with a ſponge till it come to a good luſtre with the ſaid Lee, and when the colours pleaſe you, then with fair water waſh off the ſaid Lee again, and the peece or picture though never ſo old, will become very freſh. *Qre.* if this ſecret do not onely extend to ſuch oyl peeces as are not varniſhed. Some rub over pictures or tables with an Onion cut through the middeſt. This ſecret with the precedent I had of a Dutch Mountebank, and they came ſo hardly from him as if he had been extreamly coſtive. *Vide antea, num. 49.*

73. *To help Wine that reboileth.*

IF any ſweet Wines happen to reboil in the hot part of the Summer (as I have often ſeen, and as many Vintners to their great loſſe have oftentimes felt) then *Placentius* willeth a little peece or cantle of Cheeſe to be put into the Veſſel, and preſently a ſtrange effect will follow. *Hoc ex anchora famis & ſitis.* I beleeve that the Corporation of Vintners would give twenty pound yearly to have this ſecret warranted to be true: For the beſt remedy which they have, is, to draw the Wine off from the Lee into

to

to other clean cask, thereby perſwading themſelves to cool the Wine, and to ſtay the boyling thereof: But after a while, the inward fire oftentimes begins a freſh workmanſhip, and fruſtrateth all their labour. I would eſteem him for a learned Vintner, and worthy to have the next avoidance of Bacchus his Chair, that could give me the true reaſon of this reboiling of Wines. But becauſe I have allotted ſo great a place of honor to him that can but ſhew the reaſon onely thereof, therefore I will not preſume nor profeſs to know the cauſe efficient, but I durſt undertake to perform the remedy, if I thought my reward would not be ſomewhat like unto his, that within this few years taught divers of the Company how to draw out of a Hogſhead of Wine lees, 10 gallons of clear Wine at the leaſt, which being trickt or compaſſed, or at the leaſt mingled with other Wine, hath ever ſince by divers Vintners been retailed for Wine, whereas before it was wholly ſold for Lees to the *aqua vitæ* men. And this is the reaſon why there hath never ſince been the like ſtore of Lees to make *aqua vitæ* of, as before the diſcovery of this conceit, and that the lees of many Cellars which before were liquid, are now become ſtiff like paſte, and may very wel be wrought up into the form of bals. And if I be not deceived, the firſt practiſe thereof began in PaterNoſter row, and within theſe few years; but I fear by this time it is a parcel of many mens Creed, that wil never be left til the worlds end. Wel, the poor fellow got hardly a good ſute of apparel amongſt divers of them to whom he diſcloſed the ſecret, though ſome one of them could tel which way preſently to raiſe 30 or 40 *l. per annum* unto themſelves. And therefore I ſee it is no offering of skill in

these days to Vintners. But the better course were to take a Tavern, and get a Hollibush, if France were more open, and a little more freed of the excessive impost, and so to draw wines as artificially as the best of them. For I can assure you I have almost the whole art as it is this day in use amongst the Vintners, written in a pretty volumn intituled, *Secreta dei pampinei*. And if I durst here so boldly as I could, both truly and largly write of these jumbling slights, that are too too often practised in our natural wines, by some of the Coopers of London, to the great benefit of the Merchant and Vintner, although themselves poor souls, get nothing thereby but the hooping of the vessels, and now and then a can of wine for their labours, a man would wonder from whence such great variety of jugling should grow or spring, and how these plain fellows that never read their Grammer, nor scarcely know their A.B.C. should be able to run through *Ovids Metamorphosis* as they do at midnight. And yet I cannot altogether blame either the Cooper or the Vintners man for practising of these alterations, transmutations, and sometimes even real transubstantiations of white wine into Claret, and old lags of Sacks or Malmsies, with Malasoes into Muskadels. For we are grown so nice in taste, that almost no wines unlesse they be more pleasant then they can be of the grape wil content us, nay no colour unless it be perfect fine and bright wil satisfie our wanton eys, whereupon as I have been credibly informed by som that have seen the practise in Spain, they are forced even there to interlace now and then a lay of Lime with the Sack grape in the expression, thereby to bring their Sacks to be of a more white colour into England then is natural unto them,

them, or then the Spaniards themſelves will brook or indure, who will drink no other Sacks then ſuch as be of an Amber colour. This makes the Vintners to trick or compaſs all their natural wines if they be a little hard, with Baſtard to make them ſweeter, if they prick a little they have a decoction of honey with a few Cloves to deceive the taſt, if they be cloudy or not perfect fine, they give them either the white or the yellow parrel, according to the natural colour of the wines, wherein they muſt uſe eggs, milk, Bay-ſalt, and conduit water, well beaten and laboured together with a ſtubbed rod, and then wrought ſoundly together with a parrelling ſtaff, which parrel for the moſt part in one night (unleſs the wines happen to have a flickering Lee) will cauſe them to fine, whereby you may preſently draw at a certain. But this is dangerous unleſs it be in a houſe well cuſtomed, for that the wine may not lie too long upon his parrel. And ſome wines wil not indure long after you have racked them from their parel. Note the wholſomnes of theſe Lees to make *aqua vitæ* withal. But when the wines do rope or begin to fail or faint in themſelves either in ſubſtance or colour, either by age, by the fault of cask, ſoyl, ſalt water, or other accident, then many times the Vintner is driven to his hard ſhifts, and then he helpeth himſelf with allom, with Turnſole, Starch, and with many other drugs, and aromatical ware, which he fetcheth from the Apothecary, the particulars whereof I could ſet down and apply even as they have been a long time (till within theſe few years) practiſed in one of the moſt authentique Taverns of my time. But my purpoſe is onely to put ſome in mind of their groſs night works which diſcover themſelves by candle light at their cellar windows

dows, wishing them to leave all unwholsom practises for mans body, lest if they should hereafter force me against my will to publish them to the world, I should draw my country men into such a liking of our Roiston grape, that in the end they would for the most part content themselves with their English and natural drink, without ranging so far for forraign wines.

74. *The making of a Bragget, which is many times mistaken for a Mukadel by the simple sort of people.*

PUt one part of smal Alewort that is bloud warm with one part of clarified hony according to the manner set down, *num.* 75. but put no Cloves therein in the clarifying. For the making of one Hogshead of this Bragget which is about 63 gallons, you must take nine gallons of this clarified honey, and 54 gallons of strong new ale: when your clarified honey hath stood one day, then mingle the same with your new ale in a Hogshead, first filling your Hogshead half full before you put in your honey, and then hang this aromatical composition in a long slender bag in the midst of the vessel, viz. of Cinamon 3 ounces, Ginger 3 ounces, Greins 3 ounces, Colianders 1 ounce, Cloves 1 ounce, Nutmegs 1 ounce, long Pepper half an ounce, *Cardamomum* one ounce and a half, Liquorice 1 ounce, then fill up the vessel almost full with the best of the new ale (yet some commend rather the putting in of the spices confusedly then in a bag) be sure to have 4 or 5 gallons or more of the same new ale, to fill up the Hogshead as it purges over continually. There is a lesser hole near the bung hole in beer Hogsheads, which must stand open whilest

leſt it purgeth, you muſt alſo be carefull in the beginning to give ſome little vent to the hogſhead whileſt it worketh: in three or four moneths it will be ready to drink. You muſt have a hazel ſtick of the bigneſſe of a good cudgel, ſo great as may well enter in at the round bung hole, and when your Hogſhead is about three quarters full, put in this ſtick, being ſawed croſs wiſe at the end about one cubit in length (the Vintners call it their parelling ſtaffe) as the apteſt tool for this purpoſe. Beat with the ſaid ſtaffe the new ale and the honey together a good pretty while, and when you have finiſhed this agitation, fill up the veſſel with the reſt, and let it purge as before. If you find your muskadel too thick after it hath ſtood 2 or 3 moneths, you may take a cane or pipe, made of tin plates, that will reach into the midſt of the hogshead or ſomewhat more, ſtop the end thereof, and make ſome holes in the ſides, and with a funnel you may pour more new ale into the Cane, and ſo make it thinner. The cane is an apt inſtrument to convey any liquor or compoſition into a veſſel of wine without troubling of the ſame, or turning up the leees, whereby you may draw the ſame fine preſently.

75. *How to clarifie honey ſo that the taſte thereof ſhall be much altered.*

PUt a gallon of water bloud-warm to a gallon of hony, put in your hony firſt, and with a ſtick take the depth thereof in the veſſel wherein you boil it, and then put half an ounce of beaten cloves bound in a linnen cloth therein, and let them boil with the water and honey on a gentle fire till all the water be conſumed, which you ſhall gueſſe at by this mark

on the ſtick. Your hony muſt be ſure and ſimple, not mingled with wort, flowr, or other bad compoſition, even as it is gathered upon the breaking up of the hives. It is a work of two or three hours, and the elder the honey is, the better it ſerves for this purpoſe: you muſt remember to take away the skum as it riſeth. Some boil this hony a little higher to a more conſiſtency, and preſerve fruit therewith inſtead of ſugar. Theſe two receits I had of an Oxford ſcholler, who aſſured me that he had often made proof thereof in the City of Oxford, and I know the man to be both of good conceit, and very careſull in the commendation of any ſecret to his friend, otherwiſe then may well ſtand with his own credit.

76. A Receipt for the making an Artificial Malmſey.

TAke 4 gallons of conduit water, into the which put 1 gallon of good Engliſh hony, ſtir the hony well, til it be diſſolved in the water, ſet this water in a copper pan upon a gentle fire, and as there ariſeth any skum take it off with a gooſe wing or skummer, and when it hath ſimpered about an hour, then put in a new laid egg into the water, which will ſink preſently, then continue your firſt fire without any great increaſe, and alſo your skimming ſo long as any skum doth ariſe, and when this egg begins to float aloft and ſinketh no more, then put in another new laid egg, which will ſink likewiſe, and when that ſecond egg doth alſo ſwim aloft with the firſt egg, let the water continue on the fire a *Pater noſter* while, then take it off, and being cold, put the ſame into ſome roundlet, filling the roundlet brim full. And in the midſt of this roundlet hang a bag, wherein firſt put

ſome

ſome reaſonable weight or peize, and to every eight gallons of liquor, two nutmegs groſly beaten, twenty Cloves, a raſe or two of Ginger, and a ſtick of Cinamon of a finger length. Set your roundlet in the ſun, in ſome hot leads or other place, where the ſun ſhines continually for three whole moneths, covering the bung hole from the rain, and now and then filling it up with more of the ſame compoſition as it waſteth. This I learned of an Engliſh traveller, who adviſed me to make the ſame always about the midſt of May, that it might have 3 hot moneths together to work it to his full perfection. But leſt this way ſhould happen to fail you, I have thought good for thy better ſecurity to ſet down my own fancy, for the eaſier ſtirring up of this Malmſey to his workmanſhip. Let your veſſel be ſuch as hath already cõtained ſome muſt, or other liquor that hath wrought therein (for he that knoweth not the uſe of a worker is but a ſlender Artiſt) ſtop the ſame very cloſe, and lay it in a convenient cellar till it hath wrought ſufficiently, but in the working give the cask vent by degrees, for fear of after claps. Or elſe you may eaſily procure the ſame to work, by adding of ſome yeaſt or ferment unto it, and ſetting it warm according to the uſual manner of ale and beer.

77. *How to keep Claret wine, or any other wine good many years together.*

AT every Vintage you muſt draw off almoſt a fourth part out of the hogſhead, and then rowl it upon his Lee, and after fill it up with the beſt new wine of the ſame kind, that you can get. Your cask muſt be bound with iron bands or hoops, and always

kept full and tight. I have heard that an Essex Knight useth this practise, and hath wine of nine or ten leaves (as they term it) which is so many years old.

78. *To keep Walnuts green and moist a long time, so as you may pill the kernel.*

TAke the stamping of crabs after the Verjuyce is expressed from them, lay your nuts therein one by one, so as they touch not one another, and so make *stratum superstratum*, till your vessel be full; these will last some two or three moneths, as I have been credibly informed by a Gentlewoman that made good proof thereof.

79. *How to keep the gloss of Spanish leather shoes, or buskins, a long time.*

THe blacking of a lamp tempered with the oyl of Almonds, or some other sweet oyl, is very good for this purpose. I know a Gentleman that doth use to rub his Spanish leather shoes with the back-side of a piece of Frieze-leather, but you must have care to keep this kind of leather very dry. Some maintain the gloss of this leather with a piece of black velvet only

80. *How to help smoaking Chimneys.*

IF the Chimneys be large, and carry some good length and breadth with them, then may you erect and build a false back and sides to your smoaking chimneys, so as there may be a distance of three or four inches between the old back and the new, raise this new work a foot above the mantle-tree.

81. *Tinder*

81. *Tinder and match of a new kind, and ſweet.*

TAke the light and thin ſhavings of dry fir boards, light them with a candle, and when they are almoſt burnt, put them out as you would do Linnen rags, after the flame is paſt in a ſtone pot. Then lay another thin ſhaving thereon, and with a ſteel and flint ſtone, ſtrike fire into this tinder, and blow therein till this new ſhaving do kindle, and ſo light your candle; and then put out this laſt ſhaving in ſome reaſonable time, and it will help to increaſe your tinder. This I have ſeen a Dutch Joyner uſe oftentimes in the lighting of his candle. Note here that your match and your tinder is all of one ſubſtance or matter. Alſo you may make ſweet matches to your ordinary tinder in this manner; Cut or thwite a number of ſmall Juniper ſticks, with ſharp points like tooth-picks, and dip them but a little way, and that very lightly, in brimſtone, and when the brimſtone is ſpent the Juniper will burn ſweetly.

82. *An excellent mixture to make pewter bright withall, and to take out the ſtains.*

TO a gallon of ſtrong buck Lee, put half a pound of black ſope, and a reaſonable handfull of the duſt of Flanders tile, which you ſhall make by rubbing one againſt another. Boil them well together till they become like pap or Birdlime. This will laſt a whole year: You muſt onely have care to beſtow good ſtore of labour upon the veſſel if you mean to uſe this ſcowring.

83. *To defend a Horſe from flies in his travel.*

STeep Arſmart in water, making the water very ſtrong of the herb, and therewith waſh your horſe before you mean to travel.

84. *To kill Rats in a Garner.*

BE ſure there be no holes in the bottome or ſides of your Garner, or any where elſe, ſaving above the boards which you muſt place ſhelving wiſe, or in the manner of a penthouſe throughout the garner, about half a yard or two foot from the corn, ſo as when the Rats have leaped down into the bulk of corn, then they ſhall not be able to riſe or bolt up again before you have ſped them.

85. *How to take away the offence of noiſome Vault.*

MAke the vent therof upward as large or larger then the tunnel downward, and carry the ſame up to a convenient heighth, for ſo the offenſive air as faſt as it riſes hath iſſue, and ſtays not in the paſſage.

86. *Sweet and delicate dentrifices or rubbers for the teeth.*

DIſſolve in four ounces of warm water, three or four drams of gum Dragagant, and in one night this will become a thick ſubſtance like gelly, mingle the ſame with the powder of Alabaſter finely ground and ſearſed, then make up this ſubſtance into little round roles of 4 or 5 inches in length. Alſo if you temper roſet, or ſome other colour that is not hurtfull with them, they will ſhew full of pleaſing veins. Theſe you may ſweeten either with roſe-water, civet or muſk. But if your teeth be very ſcaly, let ſome expert Barber firſt take of the ſcales with his inſtrument,

ment, and then you may keep them clean with the aforesaid rowls. And here by those miserable examples that I have seen in some of my neareſt friends, I am inforced to admoniſh all men to be careſull, how they ſuffer their teeth to be made white with any *aqua fortis*, which is the Barbers uſual water; for unleſs the ſame be both well delayed, and carefully applied, a man within a few dreſſings, may be driven to borrow a rank of teeth to eat his dinner with, unleſs his gums do help him the better.

87, *To keep either man or horſe that is tender in the foot or hoof, whereby they cannot indure any great travel.*

LEt him that travelleth much, and hath this infirmity, put in each ſock before he draw on his hoſe a new laid egg ſomewhat groſly broken, and ſo let him travel upon them. So likewiſe you muſt put in two eggs a little beaten into either hoof of the horſe, and clap cow dung upon them, and then wrap them well one night that they fall not out, and after you may travel him any reaſonable journy. This is much uſed in Italy.

88. *How to keep Oyſters good* 10 *or* 12 *days.*

SOm hold opinion that if you barrel them up whileſt they are new and quick at the ſea ſide, putting ſome of the brackiſh water where they are taken amongſt them, that ſo they will laſt many days good. *Qre.* Of diſſolving of ſome ſalt in freſh water, til it be of one ſtrength with the brackiſh, which containeth ſome eighteenth or twentieth part of ſalt, peradventure it will not be amiſſe to change your brine now and then. Some pile them up in ſmall roundlets with the hollow parts of the ſhels upward, caſting

ſalt

ſalt among them at every lay which they make. This is a good device to ſend them far into the Country, where oiſters are dainty, and ſold by tale.

89. *To keep Lobſters, Craw-fiſhes, Prawns, Shrimps, &c. ſweet and good for ſome few days.*

THeſe kind of fiſh are wel noted to be of no durabilty or laſting in warm weather, yet to prolong their days a little (though I fear I ſhal raiſe the price of them by this diſcovery amongſt the Fiſh mongers, who onely in reſpect of their ſpeedy decay do now and then afford a penniworth in them) if you wrap them in ſweet and courſe rags, firſt moiſtened in ſalt water, and then bury theſe cloaths in Callis ſand, that is alſo kept in ſome cool and moiſt place, I know by my own experience that you ſhal find your labour well beſtowed, and the rather if you lay them in ſeveral cloths ſo as one do not touch the other.

90. *An artificial compoſition wherewith to make ſmooth gliſtering and hard floors, or to plaiſter wals with.*

TEmper Ox-bloud and fine clay together, & lay the ſame in any floor or wal, and it wil become a very ſtrong and binding ſubſtance, as I have been told by a Gentleman ſtranger, who affirmed unto me that the ſame is of great uſe in *Italy*.

91. *To make Parchment clear and tranſparent to ſerve for divers purpoſes.*

MAke choice of the fineſt and thinneſt parchment you can get, ſcrape the ſame over with a knife

knife till it become very thin, (but first you must wet it well in water) then strain it upon a frame, and fasten it well, and when it is dry, oyl it all over with a pensil, with the oyl of sweet Almonds, oyl of Turpentine, or oil of Spike, some content themselves with Linseed oyl, and when it thorow dry, it will shew very clear and serve in windows instead of glass, especially in such rooms as are subject to overseers. You may draw any personage, beast, tree, flower, or coat of armour upon the parchment before it be oiled, & then cutting your Parchment into square panes and making slight frames for them, they will make a pretty shew in windows, and keep the room very warm. This I commend before oiled paper, because it is more lasting, and wil indure the blustring and stormy weather much better then paper.

92. *A profitable and cheap Morter for building, wherein either no Lime, or smal store of Lime shal be requisite.*

A Wise, wealthy, and ancient Sope-boiler, dwelling without Algate, hath for the better incouragement for others, long since erected a fair and stately edifice of brick for his own habitation, upon the good successe whereof, he hath also very lately built one other house of some charge and good receit, the morter whereof did consist of two loads of wast Sope ashes, one load of Lime, one load of loam, and one load of Woolwich sand. So likewise one other of the same faculty, being likewise of good credit and great experience, hath used onely loam and sope-ashes tempered and wrought together instead of morter, whereby he hath laid both the foundations, chimneys, and their tunnels in his dwelling house

in Southwark, and they have endured those storms already which have overturned many others, both new and old tunnels, that hath been built with the ordinary morter. It may be some Lime-men, and some of those Bricklayers that are in fee with them, may bend their force against this new practise, and labour to discredit the same by all means possible but there is no reason that can hold against experience, nor no malice so great, but that truth in her time shall be able to vanquish. And if these three trials shall not be thought a competent number to give credit to a new invention, I will upon reasonable request and warning, back and confirm them with threescore more at the least, which I can produce, already made and executed within the City of London, and the Suburbs thereof; insomuch that whosoever will take a carefull view of our late buildings that consist of Brickwork (especially within the Suburbs of the City) he shall find great store of these waste ashes to be imployed in them.

93. *A conceited drinking glass, wherein many sorts of fish will be seen to swim up and down.*

IN the middest of a good large drinking glasse, and of a bole fashion, let a short piller of glasse arise, upon the which a round globe or ball of glasse must be placed, upon which ball there must be divers sorts of small fishes well drawn and limned, then fill the glasse either with water, or with White, or Rhenish Wine, and the least motion that can happen either to the Wine or water, will make the fishes seem to play up and down within the glasse.

94. *How to diſſolve Gold, or part it from guilt Silver, without melting down the Silver.*

DIſſolve ſome *Sal Armoniack* in ſome good *Aqua fortis*, whoſe fæces (fixes the Goldſmiths improperly term them) have been firſt ſtricken down with ſome fine ſilver, or elſe diſtil by retort the ſaid *Aqua fortis* trõ good ſtore of Bayſalt firſt calcined; ſet ſome of this water in a parting glaſſe upon warm embers, and put therein your guilt ſilver, and it will ſtand in the form of a golden water. You may gather your gold again either by evaporation of the water, and ſo the gold will ſettle in the bottome; or elſe if you put Mercury thercin, it will amalgame with it, which Mercury will ſoon fly away in fume, being put into a cruſible, and leave the gold behind. I hold this to be a very profitable ſecret for the Goldſmith, unleſs the Mercury in the firſt guilding of the ſilver, convey ſome part of the gold ſo far within the ſilver as that the water can make no ſufficient penetration unto it: For by this means all the charge of teſting and parting will be ſaved, which (as I take it) will not be much leſs then four pence upon every ounce. But whereas it hath been objected by ſome refiners, that by this means there will be much gold loſt (eſpecially in ſuch ancient plate as hath been made, and perhaps melted down again, before the art of refining, which is of a *puiſne date*, was found out, for that this water doth only take hold of ſuch gold as invirones the outſide of the ſilver, I hold this to be a weak objection to diſcourage any man from the practiſe of this ſolution, for that in ſuch plate as either carrieth no touch, or ſo old a touch as the buyer ſhall not be acquainted withall, he may follow the old refining

rules: and in such guilt plate as hath been made since the art of refining hath first been used amongst us, (which is the most usual plate that is bought and sold in these days) he shal find the same a most beneficial practise, if the first doubt may be salved, which may easily be proved in one ounce or two of guilt silver, making a straight observation how much gold was bestowed thereon.

95. *How to know when the Moon is at the full by a glass of salt water.*

IT hath been credibly reported unto me, that if an ordinary drinking glass be filled brim full, a little before the full of the Moon, that, even at that instant when the Moon commeth to the full, the water will presently boil over.

96. *How to melt down the filings of Iron, nails, or other small peeces of Iron with a small fire.*

TO three parts of Iron put one fourth part of Antimony powdered, in a crusible or melting pot; set the same in any ordinary forness, and blow a little with a pair of bellows, (or else for your more ease, you may use a wind forness) and you shall find the same to melt very speedily. This way you may easily cast both Musket and Caliver bullets of Iron.

97. *How to put several Liquors or Wines into one Glass, without mixing.*

TAke a Beer glass of 6 or 8 inches in heighth, and being of one equal bigness from the bottome to the top; then pour therein some fair Water,

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an inch or two in height, upon the which lay a round trencher that is almoſt equal in compaſs with the glaſs. Then out of a long ſpouted glaſs or pot, pour gently ſome milk upon the trencher, and after that ſome Rochel or Conniack white wine, and then ſome Gaſcoign claret wine, and after Sack; and ſo you ſhal have each liquor or wine to flote upon the other without mingling together, becauſe the fall thereof is broken by means of the gentle pouring upon the trencher. Some hold opinion that the ſame may alſo be performed with a round toaſt. But I think that you muſt have a ſpecial care herein, that the heavieſt liquor do lie in the bottom, and that you proceed ſtom lighter to lighter, ſo as the lighteſt, or moſt ærious or fiery be placed uppermoſt, for each thing deſireth to be in his natural place.

98. *The Art of Memory which Maſter Dickſon the Scot taught of late years in England, and whereof he hath written a figurative and obſcure Treatiſe, ſet down briefly, and in plain terms, according to his own demonſtration, with the eſpecial uſes thereof.*

YOu muſt make choice of ſome large edifice or building, whoſe chambers or galleries be of ſome reaſonable receipt, and ſo familiar unto you, as that every part of each of them may preſent it ſelf readily unto the eys of your mind when you call for them. In every of theſe rooms you muſt place ten ſeveral ſubjects at a reaſonable diſtance one from the other, leſt the nearneſſe of their placing ſhould happen to confound your memory. Your ſubjects muſt conſiſt of Decades, whereof the firſt is a man, and the fifth a woman, or rather the wife of that man which beginneth the Decade. And by that means your firſt,

your fifth, your tenth, your fifteenth, and your twentieth ſubject, &c. both forward and backward is eaſily brought to mind. The reſt of the ſubjects in every Decade may be ſuch as are meerly differing the one from the other, unleſs you ſhal like to have ſome few of them reſembling the profeſſion of him that begins the Decade. As for example, if you begin with the Souldier, you may take a Drum & a Target for two of the ſubjects in that Decade. But if you place too many ſubjects of one nature within one Decade, you wil find them very troubleſome to remember. Theſe ſubjects would be ſuch as are moſt apt either to be agents or patients, upon whatſoever you ſhall have cauſe to place in them; and therefore Fire, a Dunghil, a Cart, a pair of Bellows, a Tub of water, an Ape, a Ship, a night Gown, a Milſtone, and ſuch like, are apt to make your ſubjects of, wherein you may place all ſuch things as you would remember, and as M. Dickſon termed it, to animate the *umbras*, or *ideas rerum memorandarũ*. But herein every man may beſt pleaſe his wit and memory. Now to proceed to the placing of theſe ten ſubjects in their ten local rooms, you may begin with a Souldier, whom you may place even in the door or entrance, confronting with a ſtern and warlike look all ſuch as ſhall offer to enter that room wherof he takes the charge; you may alſo imagine him with flaſk, touch-box, morion, piece, ſword and dagger, &c. becauſe you may happily have occaſion in the placing of ſome hard word, to uſe ſome one of theſe more fitly then the other. Your ſecond place may be your Bedſtead (if happily that ſtand next your door) at the head of which you may by a ſtrong imagination place an extream burning Fire, and at the feet thereof a great and ſmoking Dunghil.

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In your Chimney (if that likewise be next your bed, and a competent distance from the bed) you may imagine a tub full of water. Then in your window, being the next fit place, you may imagine Bellona staring with her fiery eys, and portraied in all points according to the usual description of the Poets. Then upon your Court cupboard, you may place an Ape with her clog, and in another window (if your chamber have two windows) a Ship under sail with all her tackle, Upon your Chair you may imagine a night Gown furred with Fox skin, having wide sleeves, and great pockets belonging to the same. Then upon your table standing in the middest of the room, you may place a Milstone or a Drum, and in the top of the seeling over your table, a Target, a Sword, or a Lute hanging downward. And if you want places, you may make either side of your windows to be one, and so of your Chimny. But here you must have an especial care, beginning at the door of your chamber, to take the places about the chamber according as they lie, and that before you fall to the practise of this Art, you may perfectly (as your *Pater Noster*) remember every place, and what subject you have placed therein, which you shall the better perform, if you make a full and a lively description of every subject in your mind before you place the same. Now having gotten al these subjects, with their several places *memoriter & ad unguem*, suppose you are to remember a Cat, a Lute, and a Hand, you must alwayes remember to place your first word whatsoever it be, and how unapt soever it be, in the first subject, and so forward. And therefore you may imagine your Cat scratching the Souldier by the face, til the bloud run down his cheeks, he himself swearing and

and ſtaring and ſtrugling with her. Your Lute being laid in the fire, you may imagine the ſame burning to coles, and all the ſtrings cracking in ſunder to your great grief. Then you may imagine for the better remembrance of your third word, a hand raking in the dung-hill till it become foul and loathſom in ſight; in the like manner you may paſſe through the whole decade. And if you have more words or *Capita rerum* to remember then ten, you muſt begin with the next decade of your local ſubjects, wherein you may place other ten words, and ſo you may proceed to what number you liſt, having ſubjects enough to receive them. Behold here that great and ſwelling art, for the which Maſter *Dickſon* did uſually take of every ſcholler twenty ſhillings, making one whole moneths diſcourſe of the Theorique part thereof, but in the practique he could ſcarcely tell which way to beſtow a full hour in demonſtration. And yet to deliver my cenſure hereof, according as I have found therein, I muſt of neceſſity confeſſe, that although it doth neither anſwer his great promiſes, nor the expectation of his ſchollers, whoſe good opinions he did entertain ſo long with ſuch golden hopes in the bettering of their weak memories, that yet notwithſtanding the ſame is very ſufficient to procure an aſſured and ſpeedy remembrance of any 10, 20, 30, or 40. principal things more or leſſe, that we ſhall take in charge to perform, and therefore very neceſſary for him that is charged with many errands, and would diſcharge them all in ſuch order as they are delivered unto him, as alſo for the remembrance of all ſuch pleaſant tales and hiſtories as ſhal paſſe in table talk, from conceited wits. In which two eſpecial uſes, I have often exerciſed this art for the better help

of

of mine own memory, and the ſame as yet hath never failed me. Although I have heard ſome of Maſter *Dickſon* his ſchollers, that have proved ſuch cunning Cardplayers hereby, that they could tell the whole courſe of all the Cards, and what every gameſter had in his hand. So ready we are to turn an honeſt and commendable invention into meer craft and couſenage.

99. *How to make projection, either upon* Mercury, Venus, *or any other of the baſe bodies, with a medicine ſo exalted, as that one ſhall extend upon a hundred, either too white, or too red, and abiding both the Touch, Malleation and Coppel, the gold being 24 Carots high, and the ſilver 12 ounces fine.*

Amultis amatur Alchimia & tamen virgo eſt.

I Could never yet perceive any ſufficient warrãt or allowance from the true and ancient chimical Philoſophers of all former ages, for the manifeſting of ſo great a ſecret as I have now in hand, in any plain or naked terms. And that made *Geber* to take hold of this Poſie, *Secretum tuum non revelabis cuiquam.* And *Comes Treviſanus*, doth ſo religiouſly hold and maintain the ſecretting both of the Philoſophers matter, the fire, the colours, time and proportion that is to be uſed in this great work, as that he breaketh out into this ſtrong conjuration of all ſuch happy Alchimiſts as have already accompliſhed their golden deſires in this Art. *Quod ſi materiam, pondus, aut colores noveris, adjuro te per Deum vivum ne cuiquam revelaveris.* But becauſe I purpoſe not to prophane or violate thoſe ſacred grounds of nature in this diſcourſe, but onely to particularize a few projections,

I hope that both my pardon and my fault shal carry one date, and therefore I wil proceed the boldlier in my purpose. It is a wonder to see, how every Art hath gotten his counterfeit in these days. How Logick is turned into Sophistry, Rhetorick into flattery, Astronomy into vain and presumptuous Astrology, that ancient and divine science of Alchimy into Cementations, Blanchers, and Citrinations, ending commonly either in cosenage, coinage, or in Capistro, which made *Petrark* to give a Caveat in these words. *Cave Alchimiam, semper rebus aliquid defuerit, dolis nihil.* And again, *Chimista qui tibi aurum suum spondet, cum tuo auro improvisus aufugiet.* This made *Chawcer* in his time to play so pleasantly upon the Alchimists hollow cole, and this hath made me to touch or glance at a few other slights of later date, thereby to admonish all young Gentlemen and others to take heed of all these mercenary hirelings. *Qui eum aliis mille aureos promittant, ipsi drachmam petunt. Locus poscit fabulam.* A subtile Merchant sorting himself of late, with an old smoky Alchimist for his better credit, as they became fellow travellers in the higher part of Germany together, lighting by chance upon a crew of Merchants that were wel monied, and ready for any rich prize that should be offered unto them, especially for Jasons bark that was laden with the golden Fleece, after some salutation had, and a few words of course enterchangeably passing betwixt them, this cunning companion of the Alchimists began to parley with them in this manner. My Masters and friends, you seem to be men of honest parentage and condition, and most happily to be here met both for your own good and ours. So it is, that if you will perform that Secresie which is requisite in so weighty

weighty a matter as I am in purpoſe to commend unto you, I will make you the moſt royal Merchants of the whole world. Neither ſhall any of you make the hazard or adventure of one Denier, until with your own eyes and hands you ſhall have ſeen and made a ſenſible proof of this my friendly offer. It is but in vain to uſe many words among friends: You ſhall make a perfect projection your ſelves upon Mercury, *ad omne examen*; and becauſe my ſelf and my partner will be free from all ſuſpicion of deceit, you ſhall bring the Cruſible, the coals, and alſo the Quick-ſilver with you, and we will but onely deliver you one grain of the medicine, which ſhall extend it ſelf upon a full ounce of Mercury, which you your ſelves ſhall likewiſe let fall into the cruſible. A man would think that this were plain dealing, and that unleſs theſe men were wilfully bent to cozen themſelvs, that it were impoſſible to deceive ſo many young eys that watched ſo carefully for themſelvs. But now to the practiſe. The fire being kindled, one of them ſets on the cruſible by direction of the Alchymiſt, under the noſe of a pair of Goldſmiths bellow, who told him, that for the better fixation of the Mercury, there muſt now and then a reverberatory blaſt be made with the bellows, after the Mercury was once warm in the melting pot. Now this Impoſtor had before conveyed into the noſe of the bellows, an ounce or ſomewhat more (to ſupply that which the Mercury with his ſume ſhould carry away with him) of Sol, ſo ſubtiliated by often reiteration of *Aqua Regis* upon it, that it became almoſt an impalpable powder, which when the Merchant by the appointment of the Chymiſt had blown amongſt the Mercury, he was willed to drop in the medicine,

being wrapt up in a smal paper, and then to leave the crusible in the fire, until the medicine and the Mercury were both incorporated together, and that the Mercury were sufficiently tincted into Sol, and within one half hour (after he had first caused them to melt down an ounce of fine gold in another crusible, and to put the same to the first work, for the better fusion of the powder) he willed it to be taken out of the fire, and conveyed into an Ingor, and the same being cold, became two ounces of perfect Sol, abiding both the hammer, and the test, and the horn of Antimony. It is not to be doubted, but that these young gallants were right joyfull of this good success, desiring nothing more then to become Lullists, offering to exchange their freedome both of the old Hance and of the new, for this multiplying Art.

Now this geer worketh like waxe, and the Alchymist demands 2000 Dollers, for the provision of coals, furnaces, salts, and minerals, but especially to ingrois all the Mercury that could be gotten, lest either it should rise to an exceffive price, or be transported into Spain for the refining of the Indian Ore. The mony is forthwith delivered by weight, because there must be no time lost in the telling, with a charg to use all expedition that could be for the gathering of the Mercury together, that was to be got far and near. The substance of this History is delivered already, I will not stand long upon the circumstance. The Alchymist having fingered the mony, begins to erect furnaces, and entertains them with a few distillations, calcinations, and sublimations, teaching them how to make *Lutum Sapientiæ*, *aquam seperationis*, *aquam regis*, *oleum vitrioli*, *salis*, *& sulphuris*, to congeal Mercury with the spirit of Saturn, to make *sac-*

carum

carum Saturni, to whiten their teeth withal, to blanch copper with Arſnick, to melt 1 part of Luna with 3 parts of Venus together, and then to forge plate therof, & by a certain ebulition to make the ſame divers times to touch equal with our beſt ſtarling, or higher according to the fineneſs of the ſilver that was mingled with Venus; all this (with an infinite number of ſpagirical experiments) was performed, both to paſs away the time without tediouſneſs, whileſt the Philoſophers egg (which required 10 months digeſtion) was hatching in *Cælo Philoſophorum*, as alſo to gain the more credit with the Merchants, whereby a man of theſe ſingle gifts might not be feared or miſtruſted of this ſlight, which both he and his companion were daily practiſing; & in the end, finding good opportunity, they put the ſame in execution, leaving th̄ that had moſt need to blow at the coal. I do verily beleeve, that if the old D. of Florence were alive again, he would have outbidden the Merchants for this ſecret, whoſe diſtillatory veſſels, furnaces, and other chimical inſtrumēts, were al of ſilver, as I have heard it often reported. But now to give a few Items more againſt theſe Impoſtors before I conclude, let every man that is beſotted in this art, and depends wholly on other mens practiſes (himſelf not being ſufficiently acquainted with thoſe great and hidden Maximes of nature) take heed alſo of all falſe and double bottoms in cruſibles, of all hollow wands or rods of iron, wherwith ſome of theſe varlets do uſe to ſtir the mettal and the medicine together; of all Amalgames or powders, wherin any gold or ſilver ſhal be craftily conveyed; of *Sol* or *Luna* firſt rubified, and then projection made on it, as if it were on *Venus* her ſelf: but ſpecially of a falſe back to the Chimney or fur-

nace, having a looſe brick or ſtone cloſely joynted, that may be taken away in another room, by a falſe Sinon that attendeth on the Alchymiſts hem, or ſome other ſuch like watch-word, who after the medicine and the Mercury put together in the Cruſible, entertaineth *Balbinus* with a walk, and with the volubility of his tongue, until his confederate might have leiſure to convey ſome gold or ſilver into the melting pot, which were able to deceive the beſt ſighted Argus in the world.

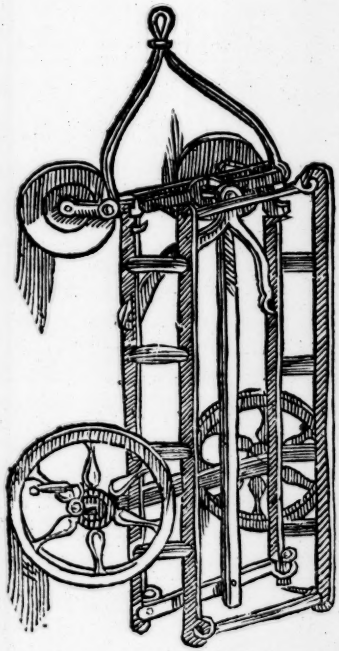
By theſe few legerdemains, I hope many thouſands will be ſufficiently warned of theſe wandring and roguing Alchymiſts, who ſince the death of Cuckow, Stanny, and Feats, and the reſt of that rabble, are become the very Juglers of the land, yea infinitely worſe then they; for that our ancient Juglers would ſhew all their Jugling tricks for a groat or a teaſter; and though now and then they made ſhew to tranſmute ſilver into counters, or money out of one mans hand into anothers, yet in the end, every man returned with the Coin which he brought in his purſe again: whereas theſe Raſcals do not onely convert other mens money into their own purſes, but procure alſo a great loſs and expence of time, which might have been many ways better, but no way worſe imployed, and can never be redeemed again. Wherefore to conclude with Petrarch, *Dic ut ea ſibi præſtet quæ promittit aliis, primumque ſuam pellat inopiam. Eſt enim ferè mendicum genus hominum, cumq; ſe pauperis fateantur, ditare alios volunt, quaſi aliena illis quam propria moleſtior ſit paupertas: ſic ut miſeri ſe alios miſerere dicere ſoleant impudenter, & ignotis etiam interdum magna promittere: O turpis promiſſio, & O ſtulta credulitas.*

100. *How to nip or close a glass with a pair of hot tongs, which is commonly called* Sigillum Hermetis.

PLace a viol or other glass having a long neck, in a pan of ashes, suffering one inch of the neck only to peer above the ashes, then lay charcole round about the neck, and close to the same, some do also cover the viol with a round glass fitted to the mouth both to keep out the ashes and also the extream heat of the fire, from striking downward into the belly of the glass, covering also the very top or sumity of the glasse with charcole 2 or 3 inches above the same, then make a fire at the top, and let it kindle of it self downward, and if that heat be not sufficient, use also the blast of the bellows, for you must force the neck of the glass even to a heat of fusion, and when it is ready to melt, then nip the same close together with a pair of tongs being red hot, which for the same purpose must be kept in a strong glowing fire, and if you can take it in his just time, you shal close the same so strongly, that it is impossible for any air to issue out. You may safely keep any distilled Oyl or water in a glasse so nipt. But take heed how you keep the juyce of any strong or fiery plant, as also of any decoction that is apt to work it self into a body, as new must, or the strong wort either of ale or beer, lest you do not onely mispend your time, lose your liquor, and break your glass, but also happen to get a shrewd turn your self if you be within gunshot. For there be certain wild spirits within who can indure no imprisonment, but if they can find no way, they will make way, bearing out before them both lock, bolt, and hinges, and yet they are such as the

the Philosopher cannot want, though the vulgar sort know no use of them.

101. *A Wagon to be drawn with men, instead of horses.*



THe joints & other parts of this Wagō are so knit together with hooks and pins, as that it may easily be dis-jointed and taken in sunder, whereby many of them may be couched in a narow room, & wil lie close together in a ship. It is to be drawn with six men, whereof two of thē must labor at the forecariage thereof, and at either wheel other two, which must work by winding of the handles, (which are of purpose fastened both to the nave of the wheel and axletree) either forward or backward as occasion serves. The use therof is to convey their victuals and other necessaries from place to place, when the Mariners and souldiers have cause to land in some countries where the place affords no horse or other beasts fit for labour or carriage. I know not the author of this invention, but because it came so happily to my hands, and carries some good

conceit

conceit with it, I think it neceſſary to be publiſhed amongſt other ſerviceable deviſes for the ſea.

102. *A delicate Stove to ſweat in.*

PUt into a braſs pot of ſome bigneſs, ſuch proportion of ſweet herbs, and of ſuch kind as ſhall be moſt appropriate for your infirmity, with ſome reaſonable quantity of water; cloſe the ſame with an apt cover, and well luted with ſome paſte made of flowr and whites of eggs: At ſome part of the cover you muſt let in a leaden pipe (the entrance whereof muſt alſo be well luted) this pipe muſt be conveyed (through the ſide of the chimny where your pot ſtādeth) in at a thick hollow ſtaff of a bathing tub croſſed with hoops, according to the uſual manner, whereby you may cover it with a ſheet at your pleaſure. Now the ſteem of the pot paſſing through the pipe under the falſ bottom of the bathing tub, which muſt be bored full of big holes, will breath ſo ſweet and warm a vapour upon your body, that (receiving ayr by holding your head without the tub as you ſit therein) you ſhall ſweat moſt temperately, and continue the ſame a long time without fainting. And this is performed with a ſmall fire of charcoal maintained under the pot for this purpoſe. Note, that the room would be cloſe wherein you place the bathing tub, leſt any ſudden cold ſhould offend you whileſt your body is made open and porous to the ayr.

103. *The Art of Refining of Sugar.*

MAke a very ſtrong lee of unſlackt lime, wherein diſſolve as much courſe ſugar as the lee wil

bear, then boil the ſame a little, and preſently put in the whites of eggs firſt beaten into oyl, which will make it give up a ſcum, which muſt be taken away as long as any riſeth. Then pour all the liquors through a great woollen cloth bag & ſo the filth wil remain behind in the bag ; then boil the liquor again till it be ripe, which you ſhall know by taking two or three drops of the liquor, and putting that upon a plate of cold iron, letting it cool, which when it is congealed a little like ſalt, or as a mean between ſirrup and hard ſugar, then take the liquor from the fire, and pour out the ſame into the earthen pot, or molds made for the ſame purpoſe, having a hole in the ſmaller end, which muſt be ſtopped for one night after, and after that night open it, letting all the ſubſtance remain in the pot, until the ſirrup begin to leave dropping (into the neather pot wherein molds ſtand) or drop very ſlowly at the little hole; this ſirrup (as I take it) is that which they cal the Malaſſoes. Then take Potters clay, and clay the broad ends of the pot over therewith, and as that clay ſinketh down by reaſon of the ſhrinking of the ſugar, fill them up with more clay, repeating the doing thereof, till the ſugar ſhrink no more ; then take the ſugar-loaves out of the Molds, and put them in a Stove till they be dry and hard, and after bind them up in papers according to Art. Note that if the ſugar after the firſt boiling, and being poured out into the molds, and beginning to congeal, appear to be over-black or foul, and ſhal not becom white at firſt in the ſame molds, but ſome ſpecial part remain therein, then it muſt be new boiled with Lee in all points, *ut ſupra*, till it be perfectly white. Alſo the clay muſt be potters clay, tempered like pap in water, and the ſame muſt run through

through a Colander ful of holes upon the bottom of the Sugar loaf, for the ſoftneſſe of the ſugar wil not ſuffer the preſſing down of any ſtiff clay. This receit though happily it want ſome of the circumſtances in the Art of refining, yet it ſhould ſeem the matter of ſubſtance is ſufficiently unfolded herein. I had the ſame of a Gentleman of good worſhip, and a great artiſt.

104. *The diſcovering of Sal Gem in a Philoſophical diſcourſe as well upon the common as upon the vegetative and fructifying ſalt of Nature.*

HAving found by ſundry obſervations, drawn from experience her ſelf, the undoubted mother of all true and certain knowledge, that all ſorts and kinds of Marl, or ſoyl whatſoever, either known or uſed already for the manuring or bettering of all hungry and barren grounds, or as yet concealed, and kept in the boſome of nature, from the common and vulgar ſort of people, to draw their fructifying vertue from that vegetative ſalt (which M. *Bernhard Paliſſy* in his learned and Philoſophical treatiſe, *de la nature des eaux & fonteines*, doth ſo often term by the name of a fift element, whereon all our ancient Phyloſophers did ſcarcely dream) I have thought good, becauſe I would not ſeem fantaſtical, & overweening in my own conceit, as if I were the firſt broacher of this opinion, before I proceed to any practical diſcoveries herein, firſt to ſet down that ſhort and ſweet diſcourſe of *Franciſcus Valetius* in his book of *de ſacra Philoſophia*. cap. 34. upon the miracle contained in the fourth book of the Kings and ſecond chapter, and then to amplifie the ſame by

some of those manifest experiments which are common in this land already, and by some others of more value, and yet of lesse charge, although as yet not known, or at the least not published by any former Author.

In the Fourth Book of Kings, the Second Chapter, the 19, 20, 21, and 22 Verses, it is thus written: *And the men of the City* (that is of Jerico) *said unto* Elisha, *Behold sir, the dwelling of this City is pleasant, as thou thy self seest, but the Water is naught, and the Ground barren. He said, bring me a new Cruse, and put salt therein. And they brought it to him. And he went unto the Spring of Waters, and cast the Salt therein, and said, Thus saith the Lord, I have healed these Waters: there shall not come henceforth either Death or barrennesse. So the waters were healed unto this day, according to the saying of* Elisha, *which he spake.*

Whereupon *Valerius* treateth in this manner. There is no doubt but that this, as also divers other signs and tokens were shewed unto the people of Israel by way of figure, as *St. Paul* doth testifie, and that the same doth signifie some other purifying, and cleansing of waters, and that it was done in token of some Sacrament. But whether there be any regard to be had of Nature in this miracle, or no, we are at this present to consider and examine. For I have oftentimes observed, even in the performing of miracles, that for the most part, it pleaseth God to use some natural cause, and that upon many and excellent reasons him moving thereunto. Wherefore seeing the barrennesse of the earth is cured by the Waters, it is manifest that there is nothing else meant in this place, but that the Waters were of such kind and quality,

quality, as that the earth being watered therewith, became barren by their corruption. And it ſeemeth by all probability that this fault was in their ſaltneſs, both becauſe it is an ordinary accident to many waters, wherby they are made unwholſom to be drank, and becauſe that of all other things doth moſt of all make the earth unfruitfull; whereupon it grew into a cuſtome with our ancient forefathers, that all ſuch ground as became forfeit and confiſcate unto the Crown, by reaſon of an high and capital offence committed, ſhall be ploughed and ſowed with ſalt, which we read to have been done by *Abimelech*, in *Iudg.* 9. when he had deſtroied the City of the *Shechemites*: And the Pſalmiſt ſaith, He hath deſtroyed a fruitfull land with ſaltneſs, for the wickedneſs of the inhabitants. And therefore ſaltneſs is a principal means to make the ground unfruitful, and the ſowing of ſalt thereon bringeth forth barrenneſs and a curſe upon it.

But how then commeth it to paſs, that if the waters of *Iericho* did hereby both become unſavory for the people to drink, and unprofitable for the increaſe of the earth, that there ſhould be any naturall vertue in ſalt, to help and ſweeten them, eſpecially when St. *Iames* ſays in the 3d chapter of his Epiſtle, *My Brethren, can the figg tree bring forth grapes, or the vine bring forth figs?* So neither by the ſame reaſon can ſalt make waters to be freſh and ſweet. Neither can it be denied, but that as contraries are remedied by their contraries, ſo likewiſe that the faults of al things are increaſed by their like, and ſemblable Natures. Therefore one of theſe two muſt of neceſſity fal out, that either in the miracle of *Eliſha*, there was no regard had of nature at all, but that there was a meer

contrary course to nature used, thereby to make the miracle the greater (for we read of the like often in the holy Scriptures) or else that the fault of these waters, was not in their saltnesse, but rather in some other rotten and putrified corruption, which as in all other things, so in water most especially is corrected by the addition and mixture of salt. For salt being of a hot and dry nature, and by solution being very apt to incorporate therewith, consumeth all the putrified vapours or parts thereof, and correcteth all the putrifaction which it finds, and it maketh al good waters to keep sweet and sound the longer. For the Mariners themselves can witnesse, that such waters as be somwhat brackish, are the best for long voyages, because they will last longer then others : and therefore they do often water their ships from springs that be near the sea. And furthermore they that do search more narrowly into the nature and property of all things, do constantly affirm, that such springs as be offensive in smell, or that carry any bad or corrupt tast with them, are no way better to be purified and cleansed, then by casting of salt into them. Therfore this seemeth very probable, for that (besides all which I have already alledged) waters do become most deadly and contagious, by their putrified and offensive smels, rather then by their saltnes. Yea the saltnesse of the water unlesse it be extream (as in the sea of Sodom, which for that it ingendreth no live thing, and also destroieth whatsoever falleth into it, it is called by the name of the dead sea) doth neither tend to destruction, neither is it offensive to the fertility of the ground, but rather being melany brackish, and thereby it self also not subject to putrifaction, as we may behold in the sea, it maketh the waters themselves

themſelves moſt fruitfull. Neither is there any place in the whole world, where that generative vertue doth more abound, or where there is more infinite generation and multiplication of creatures, then in the wide Ocean. And I do verily beleeve, that the ſpirit of God, which in the beginning did ſpread it ſelf upon the waters (which I hold to be a cerrain fire) did make them to be of that nature, that is to ſay, thick and ſalt, and by that reaſon they are much more apt for the generation of all creatures, then any freſh waters whatſoever. Now then every kind of ſalt water is not hurtfull to plants, neither is it hurtfull to all alike; but there be certain plants which proſper beſt in ſalt waters: and thoſe ſprings which be ſomewhat brackiſh, are rather unfit to make drink for mans body, then to water the grounds. For nothing is more unſavoury in our drink then ſalt, becauſe that our thirſt doth naturally deſire to be ſatisfied with that which is cold and moiſt, whereas theſe watering dews do rather repreſent a food, then a bare drink to the earth, for they give a kind of nouriſhment unto plants; neither do they offend, unleſs they be over ſalted like Brine. So that according to the meaſure of ſaltneſſe, theſe waters be either good or hurtfull to all kind of vegetables; for if they ſavour of the exceſs, then they burn and dry up the ground, and ſo make it barren: but if they be moderately ſalt, they agree wel with divers plants, and be not very hurtful unto any.

So likewiſe all other living creatures by the extremity of ſaltneſſe are deſtroyed utterly, as we ſee by the Red ſea, for they are even parched away therwith; but if that the ſame be more temperate (as in all other ſeas) many creatures are engendred ther-

by,

by, and do grow into huge and mighty bodies, and be more ſound then any other creatures, and many of them being dead, may be kept a long time; although I am not ignorant, that ſome kinds of fiſhes cannot endure the leaſt ſaltneſs that may be, neither can they continue or live but in the freſh water onely, and ſome others again do thrive and proſper in either of them; ſuch is the great variety of natures. But unto man, and to divers other land creatures, the eating of much ſalt is very contagious, becauſe it maketh the bloud ſalt, and it breeds barrenneſſe to mans body by the extream ſiccity thereof, and it maketh our ſeed or nature too ſharp; but the ſame being moderately taken, is very ſtirring in our bodies, and provokes them to venerous acts, whereby it helps to the generation of mankind.

And therefore me thinks, that all thoſe controverſies about the ſeveral natures of ſalt, are but frivolous, wherein ſome do contend that it engenders barrenneſſe and death, and therefore it was uſed to be thrown upon curſed grounds; and others would have the ſame to be of a fruitfull and incorrupt nature, which made the Poets to feign, that Venus was born in the ſea, by means of the ſperm of the Gods that fel into it, and ſo they called her ἀφρόδιτην of the ſome or froth of the ſea. And here by the way I will make bold alſo to inſert the opinion of that learned and great Magician, Jo. Bap. 347. who writing upon the helps of conception, ſaith, that ſalt doth greatly further procreation, for it doth not onely ſtir up luſt, but it doth alſo miniſter fruitfulneſs. And therefore the Ægyptians did uſe to feed their Bitches with ſalt meats, when they found them unapt for generation. And Plutarch doth witneſſe, that ſhips upon the ſeas

are

and peſtred and poiſoned oftentimes, with exceeding ſtore of mice. And ſome hold opinion that the females, without any copulation with the males, do conceive onely by licking of ſalt. And this maketh the Fiſh-mongers wives ſo wanton and ſo beautiful. Which cauſed the Egyptian Prieſts by the report of *Plutarch* moſt religiouſly to abſtain from ſalt, and ſalt meats, for that they found them very ſtirring and provoking to venery. Wherefore ſince the nature of ſalt is to defend and take away all putrifaction, which leadeth every thing unto deſtruction, it ſeems upon good reaſon that this was the ſalt of the waters of Jericho, and that Eliſha did hold a natural courſe in correcting of them: God himſelf exalting above nature that natural property which he had firſt given unto ſalt: for otherwiſe, neither ſo ſmall a proportion of ſalt, would have ſufficed to have purified ſo great a quantity of waters, neither could theſe waters have laſted ſweet untill this day. Thus far Valerius.

Now that we may yet have a further, and more inward ſpeculation into the nature of ſalt, it ſhall not be impertinent to our purpoſe, to ſet down & gather all thoſe obſervations, which I have alſo culled and gathered out of two larger treatiſes, the ſame being even wrung out of the bowels of the earth, by that learned husbandman Maſter *Bernard Paliſſy*, whereof the one is intituled, *Des ſels diverſes*, and the other *De la marn*, whereby all thoſe that be true infants of Art, may receive a full light into Nature, which doth here preſent her ſelf in all her royalty, with her *Cornucopia* in her hand, and the ignorant Farmers may alſo glean with them, a few looſe and ſcattered ears, to make ſo much bread of, as may

relieve their hungry bellies. And having performed this collection, I will set down such particular practises as have their full warrant from these two Theoricks, and may serve in divers parts of this land, either for arable or pasture grounds, where the ordinary soil or dung doth fail us.

A Philosophical discourse upon salt.

There are so many sorts and kinds of salt (saith Master *Bernard*) that it is impossible for any man to number them all; and further I tell thee, that there is not any one thing in the world, which doth not participate of this salt, whether it be man, beast, tree, plant, or any other kind of vegetable, yea, even the mettals themselves; and that which is more, there is not any kind of vegetable whatsoever, that could grow or flourish, without the action of salt, which lies hid in every seed; and besides all this, if the salt were divided from the body of any living man, or from stones which are wrought up into strong buildings, or from the principal posts, the beams, and rafters of any house, they would all fal to powder in the twinkling of an eye. The like may be said both of Iron, Steel, Gold, and Silver, and all other mettals. And therefore he that would know of me how many kinds of salt there be, I shall be forced to answer him, That there be as many as there be several sorts of tastes, or scents.

Diversity of Salts.

Coppres is a salt, Niter is a salt, Vitrial is a salt, Allom is a salt, Borras is a salt, Sugar is a salt, Sublimate is a salt, Saltpeter is a salt, the Salt gem, Le Salicor, the Tartar, Sal Armoniack, all these are divers kinds of salts; and if I would take upon me to name them all, I should never make an end. The salt which the Alchymists call Sal Alcali, is extracted from an herb which groweth in the salt marishes of the Isles of

Xantoign.

Xantoign. The ſalt of Tartar, is nothing elſe, then that ſalt of the raiſins which giveth the taſte and ſavour to the Wine, and defendeth it from putrefaction: and therefore I ſay yet again, that the ſavour of all things proceedeth from ſalt, which alone cauſeth the vegetation, perfection, maturity, and the whole good that is contained in every thing that nouriſheth.

And although there be divers ſorts of theſe and other vegetables, whoſe ſalts be more fixed, and of harder ſolution then the ſalt of the Vine, *& du ſalicor*, nevertheleſs I ſay, that in all manner of Trees and plants there is more or leſs of this ſalt, *videlicet*, ſo much as is ſufficient for them, as well as in thoſe others before mentioned; for otherwiſe many kinds of Aſhes would not ſerve to whiten linnen cloths: by the effect of which aſhes thou maieſt eaſily underſtand that there is ſalt in all things. And thou art not to think that the aſhes be of ſtrength to whiten, but only by the vertue of their ſalt, for otherwiſe the ſelfſame aſhes might ſerve divers times. The properties of ſalt.

But inſomuch as the ſalt which is within the ſaid aſhes commeth to be diſſolved in the water wherein they boil, it penetrateth the linnen, and by his vertue, ſharpneſs and biting; all the filth and ſoil of Cloth is diſperſed, mollified, and carried downward with the water, which afterwards becommeth a Lee, becauſe that therein reſteth and remaineth all ſuch ſalt as was in the aſhes before, being now diſſolved by the action of the water, and the aſhes by this means having loſt their ſaltneſs, have not any more ſtrength to whiten any other linnen, and men caſt them out into the ſtreets as altogether unprofitable. Mark yet one other example. When the Salt-Peter men ſeek to draw out Salt-Peter from the earth, they work Salt the ſtrength of aſhes.

in the same manner as is before set down for the making of the Lee, and when they have gotten out the salt-peter, both the ashes and the earth, out of which they have now taken the salt, are altogether unprofitable, for that there is no more salt left, which was the principal worker.

And yet for thy better instruction, consider those men which tan the hides of beasts, they take the barks of Oak, and having dried and broken them, they lay them amongst the hides in their tanning Fats; and when the hides have remained their full time with those barks, they cast them away as a thing of no further use (although I know that in divers places where fuel is dear, they use to make clods or turfs of them, in the likeness and form of cheese, which they cause to be dried, and so burn them for want of other firing) but the ashes of them are nothing worth, because the salt of them is already spent.

Doest thou not understand hereby, that it is not the bark that hath hardened and tanned the leather, but the salt which is contained therein? For otherwise the same barks would serve again; but because the salt is dissolved, it is soaked into the leather, by reason of his moisture, which hath made an attraction thereof to serve his own turn. It is also to be noted, that in all kind of woods the salt is in a manner wholly in the barks, and that such wood as is barked doth never yeeld any strong ashes.

Mounsieur Sisly Duke Mountpensier his Physitian, shewed me upon a certain time, a stick of Cinamon, which was about four foot in length, and an inch thick; I tasted of the uttermost bark thereof, and it had the lively and natural savour of the best and strongest Cinamon, whereas in all the rest of the stick

ſtick there was no more taſt then in a ſtone. And this is the reaſon why the Tanners account of nothing els but the barks, becauſe of the ſalt which is in them; for otherwiſe the reſt of the wood being wrought into powder, might ſerve their turn as well.

And for further proof that there is ſome ſalt in every thing, we read that the Ægyptians were wont to uſe Niter, and other aromatical bodies, about the dead bodies of their Kings and Princes, which we do call embalming; which Niter is a preſerving ſalt that defendeth from putrefaction; and their fleſh ſo embalmed, is called *Mumia*, which the Ægyptians do find to be very medicinable, and for my part I think the ſame more wholeſome then potable gold. There be ſome in our time that would fain imitate that ancient manner of embalming, and ſeek to make a kind of *Mumia* of their bodies who have ſuffered death for ſome capital offence; but they fail herein, and their *Mumia* doth ſoon corrupt and putrifie, for want of ſuch excellent aromatical drugs as thoſe ancient Ægyptians uſed. For now it is generally holden, that all thoſe ſweet ſmelling ſimples, all the Rubarb, Gums, and other aromatical ware, are greatly ſophiſticated before they come to our hands, and our common ſalt is not of that vertue to preſerve things withal, as thoſe aromatical drugs which come from the bleſſed Arabia, and other hot countreys. And that every thing hath ſome ſalt in it, it is manifeſt, for that it is poſſible to make Glaſſe of all kinds of aſhes, although ſome ſorts of them be of harder fuſion or melting then others. And were there not ſome ſalt in all trees and herbs, it would be moſt impoſſible to make glaſs of them.

Glaſs of all kinds of aſhes.

The ſecret virtues alſo which lie hid in ſalt con- The virtue of Salt.

firm the same. For salt whiteneth all things, it hardneth all things, it preserveth all things, it giveth savor to all things, it is that Mastick that glews all things together, it gathereth and knitteth all mineral matters, and of many thousand pieces it makes one mass. This salt gives sound to all things, and without the sound no mettal will ring in his shrill voice. Salt maketh men merry, it whiteneth the flesh, and it giveth beauty to all reasonable creatures; it entertains that love & amity which is betwixt the male and female through that great vigour and stirring up which it provoketh in the engendring members; it helps to procreation, it gives unto creatures their voice, as also unto mettals. Salt is the cause that many smal pibblestones being subtilly powdered, become one mass, whereof they make our drinking glasses, and all other sorts of Table-vessels; and by the power of salt, all substances may be brought into transparent bodies. And it is salt that makes all seeds to flourish and grow: and although the number of those men is very small, which can give any true reason why dung should do any good in arable grounds, but are led thereto more by custome then any Philosophical reason, nevertheless it is apparent, that no dung which is laid upon barren grounds, could any way inrich the same, if it were not for the salt which the straw and hay left behind them by their putrifaction. And therfore all these simple sorts which leave their muckheaps abroad, and subject to the weather, shew themselves to be but mean husbandmen, and that they never tasted of any true natural Philosophy. For the rain which falls upon these dung-hils, flowing downward into the valleys, doth also carry with it the salt of the dung, which dissolveth it self with the moisture:

Muck-heaps ought to be covered.

ure: whereby the ſoyl being afterward laid abroad upon the land, doth little or no good unto it. But if thou wilt not give credit unto my ſpeech, yet mark how the labouring Hind, when he carries his dung to the field, how in diſcharging of his loads he leaves it in certain heaps together, and a while after, he commeth to ſpread it all over the ground, and layeth the ſame in equal level; and afterward when the field happens to be ſowed with corn, thou ſhalt alwayes find the corn to be more green and rank in thoſe places where the ſame heaps were firſt laid (after they have lain there ſome reaſonable time) then in any other place in all the ground beſides; and this comes to paſſe, by reaſon that the rain which fell upon them hath carried even the ſalt through them, and conveyed it into the earth that was under them. Whereby thou mayeſt eaſily gather, that it is not the dung it ſelf which cauſes fruitfulneſſe; but the ſalt which the ſeed hath ſucked out of the ground.

And hereupon it commeth to paſſe, that all excrements as well of man as beaſt, ſerve to fatten and enrich the earth. But if any man will plow and ſow his ground yearly without dunging the ſame, the hungry ſeed in time will drink up all the ſalt of the earth, whereby the earth being robbed of her ſalt, can bring forth no more fruit, until it be dunged again, or ſuffered to lie fallow a certain time, to the end that it may gather a new ſaltneſſe from the clouds, and rain that falleth upon it. But I ſpeak not here of common ſalt, but of the vegetative ſalt; for there be ſome that hold opinion, that there is no greater enemy to all ſeeds then ſalt, and that becauſe in ancient time, when any wicked or deſperate villain had committed any notorious crime that deſerved death, he had ſentence given

given him to have his house raced, his ground turned up, and sowed with salt, that it might never after bring forth fruit again. I know not whether there be any Country whose salt doth not agree with corn: but I am sure that upon the little hillocks in the salt Marshes of Xantoign, men do mow as good grass as in any other place that ever I came in. And those hillocks do come up of the grounds and washings thrown up from the bottome of the same Marshes, which are as brackish as the sea water, and yet nevertheless I did never see any fairer corn in my life then groweth in them. And therefore I know not why our Judges have taken occasion to sow salt on the offendors grounds, to bring a curse upon them, unlesse there happen to be some such Country where salt is the meer enemy of all seeds. But to continue our first course, and to prove that salt is no enemy, either to the vegetative or sensative nature. We see that the Vines of the Country of Xantoign which are planted in the midst of the salt marshes, do bring bring forth a kind of black raisin, which they call *Chanchets*, & whereof there is a wine made that is nothing inferior to our Hypocras, in which they use also to dip their toasted bread, as they do in Hypocras. And these vines are so fertile, that one plant of them doth bring forth more fruit, then six of those that grow in Paris. See now what reason I have to think that salt is so far off from being an enemy to nature, that on the other side it doth rather help the goodnesse, sweetnesse, maturity, generation, and preservation of the said Vines. And not onely salt doth give his aid, and help herein, but also the air it self by his exhalations. In the aforesaid Islands, and within the salt Marshes, there is a salt Hearb found called

Salicor,

Salicor, whereof the moſt beautifull glaſſe of all other is made; and there is alſo gathered that Xantoign Wormwood, ſo called of the Country where it groweth. The ſame hearb hath this property, that if one do boil the ſame, and with the decoction thereof temper a little meal, and make it into paſte, and ſo fry the ſame either in lard or butter, and eat thereof, it will expell, and drive out all ſuch worms, as are either within the bodies of men, or children. And before I underſtood thereof, I had ſix children that died of the worms, which I did manifeſtly perceive, as well in the anatomizing of their bodies, as alſo for that oftentimes they voided them at their mouths, and when they were drawing to their end, theſe worms would iſſue at their noſethrils. My purpoſe is not hereby to prove that common ſalt doth agree with all kind of plants, but I am well aſſured that the ſalt Marſhes of Xantoign, do bring forth all manner of fruits that are planted there, and the ſame ſo pleaſant as in no place more where I have travelled: All wild hearbs, thorns, and thiſtles, do proſper ſo exceedingly there, as no where better, which is a ſufficient confutation to thoſe which would have ſalt to be enemy to all plants. For if it were an enemy to plants: it ſhould alſo be an enemy to the nature of man, which the Burgonians, wil by no means confeſs, for if they were ſo perſwaded, they would never have ordained that ſalt ſhould be put in the mouths of their infants at their baptiſm, whereupon they are termed the powdred Burgonians. Neither will the beaſts agree that ſalt is an enemy unto them, for the Goats will devour as much thereof as you will give them, and they ſeek out purpoſely for briniſh wals, againſt the which men have made water, even to

lick them. And the Pigeons when they happen to find an old wall whoſe temper was made of Lime and Sand, and begins once to molder away, they will never leave it, nor be driven from it.

Now ſome ſimple Clown that never knew what learning meant, will perhaps imagine that they feed upon the ſand, but that is but a blind conceit, for it is not digeſtible, whereas this is the very potable gold of the Pigeons, and therefore we are not to think that they ſeek for ought elſe then the lime that is in the mortar, and that for the ſaltneſſe thereof. And if they happen to ſwallow one grain of ſand, it is againſt their wils.

The Oiſters for the moſt part are alſo nouriſhed by ſalt, and their ſhels are compounded of it, which they themſelves have wrought up, and it is very apparant that it is ſo, for that their ſhels being caſt into the fire, do make a crackling much like to a common ſalt. And if ſalt be of that virtue as to work an erection of thoſe ingendring parts (as I have ſaid before) it is a thing moſt certain and well approved, that Oyſters themſelves are of the ſame operation: which approves my former allegation, that thoſe Oiſters are for the moſt part nouriſhed with ſalt.

But for a further confirmation, that ſalt is no enemy to any vegetative nature, let us a little behold the work of the plain Countrymen of Ardenna, in divers places whereof they cut down woods in great quantity, and thoſe they couch and range in the earth in ſuch ſort, as that there may be drawn unto them ſome air from below, then they lay great numbers of clods of clay upon the ſame wood, yet ſuch as are full of ſwarth, and graſſe, and afterward they kindle the wood which lies thus covered with the turf, and after

after they have burned them altogether ſufficiently, they do diſperſe them over the face of the whole ground, as we uſe to do in our dung; then they plow it, and ſow Rie there where nothing elſe but Wood grew before, and the Rie commeth up abundantly: and this they do every ſixteen years; and in ſome parts but ſix years, and in ſome parts but four years only, wherby the ground being ſpared ſo long, bringeth forth afreſh as much wood, and as great as at the firſt. And of this Wood they fell ſo much as is ſufficient to enrich the ground for one years crop, and burn the ſame with their turfs together as before; and ſo conſequently every year until the number of ſixteen years be expired, and then they begin again at the firſt piece of ground which they had plowed ſixteen years before, in the which they find the wood of as great a growth as in the beginning. Hereby it is manifeſt, that the ruſtical opinion of thoſe clowniſh people of that Countrey is utterly falſe, who think, that the heat of theſe fires, and the aſhes, are the onely cauſe which maketh their cold countreys fruitful, whereas indeed it is the ſalt of theſe trees, herbs, and roots being burnt, which they have left behind them. And therfore if my wits were able to ſearch into all the vertues and properties of ſalt, I would think to do wonders thereby. For even the Alchymiſts give a blancher to Venus with the ſalt of Tartar, or ſome other kind of ſalt. And ſalt is a moſt neceſſary thing for the Diers, for that Allom which is a ſalt, draws unto it the colours of Braſil, and of Galls, and of other matters, and ſo makes both Cloth, Silk, and Leather to take their Die the better, inſomuch as the Diers, when they would die a white cloth into red, are ſometimes forced to dip it firſt in allom water. Yea,

and some kinds of salt do so harden iron, and do give such a temper to the edges of weapons, as that one may cut Iron with them, as if it were but a piece of wood. What should I say any more of this salt, for it passeth my reach to make any true description of the excellent vertues thereof? Onely I wil conclude with this, that if it were possible to keep the same from moisture, then divers subjects wherein it is included would last for ever; and so the salt that is in wood would defend the same from all putrefaction, and if all humidity might be defended from entring into a piece of wood, there would never any worms breed or engender in the same: for it is impossible that any putrefaction should begin, unless some moisture be first kindled by way of putrefaction. Thus much out of the first Treatise.

Now I will take out a few of the most principal notes out of his large discourse on the title of Marl; and so proceed from these French Theoricks to some English practises.

A practical discourse upon Marle.

Marl (saith Master *Bernard*) is commonly a white earth which men dig out from under the ground, and for the most part they are forced to make pits in such sort as they do for wels before they can come at it, and where they find any store thereof, they lay the same upon their hungry and barren grounds, first in small heaps, and afterwards they disperse the same upon the whole field, as is accustomed in the common manner of dunging. And this Marl will keep the ground whereon it is laid, some 10 or 12 years in heart, and in some countreys for 30 years. And sometimes the vein thereof begins at the very entrance of the pit, and so runs down many yards deep; and somtime we are forced to dig eight or ten yards before

before that we can come unto the Vein thereof.

But one thing amongſt the reſt ſeems moſt ſtrange of all other (which I have heard ſome men maintain) that it profits the ground very little the firſt year that it is laid abroad, and that by reaſon of his exceeding heat, whereby it burns up the ſeed that is then ſown. But this is eaſily anſwered, for that in the grounds bordering upon the woods of Arden, which are very cold, they uſe Lime inſtead of Dung, and thereby they make the earth moſt fruitfull that was barren before. Now if Lime (which is nothing elſe but a baked or burnt ſtone within thoſe fiery furnaces, and whoſe moiſture is altogether exhaled, ſo as there remains therein nothing elſe but the terreſtrial parts repleniſhed with a fiery vertue) be found ſo rich a ſoil, I know not why the heat of Marl may not much better be endured. But it is very requiſite to ſpread the ſame upon the earth before the winter begin, to the end that the froſty weather may the better diſſolve the ſame.

There is ſome Marl that is as white as Lime, and other ſome that is of a gray or ruſſet colour, ſome of it is black, and ſome is yellow. The cauſe of the white Marl proceeds of his long decoction: That which is black may have many cauſes, the principal whereof is, that there is not any long time paſt ſince the matter thereof began to congeal; and this Marl is more eaſie of ſolution; and peradventure ſome putrified wood, or ſome minerals have turned the matter into a black colour. And as for the yellow Marl, that colour may happen either of ſome Iron mine, or of ſome mine of Lead, Silver, or Antimony; and thus you ſee the reaſon of the diverſity of colours that happen to Marl. Divers colors of Marl.

That Marle is not hot.

Marl is no other thing then a kind of clay ground, and therefore seeing clay is cold and dry, as it appeareth by the Mercasites, and by wood that is both metalized and petrified in clay grounds, it is manifest, that Marl is also cold and dry, and therefore it is not the heat thereof, which bettereth or amendeth barren grounds.

The beginning of Marl with the transmutation thereof.

All Marl was earth before it became Marl, it is a kind of clay ground, and chalk it self was Marl before it became chalk: And that which is more, that which is yet chalk within the Matrix of the earth, wil in time harden into a white stone. And last of all, whersoever there be any stones that be subject to calcination, they were first Marl before they were stones, for otherwise by their calcination they could not possibly amend any barren grounds.

Marle to be dissolved by frosts.

When Marl hath once begun to pass his decoction, it becommeth so hard, that the rain cannot dissolve it so soon as we would have it, but it remaineth in smal pieces upon the ground undissolved, and hereby it comes to pass, that it can impart none of his strength unto the ground, until it be melted and liquified, and for that this cannot be suddenly performed as in the first year, therefore the frosts in some reasonable time after do cause a dissolution thereof, and then it helpeth toward the generation and germination of all seeds, that shall be presented unto it. Also chalk and lime, after the frosts have taken them, whereby they crumble into powder, do become good Marl, and serve instead thereof.

How Marle works his effects.

Although I would not have the generative vertue of Marl attributed to his heat, yet my meaning is not thereby to rob Marl of his heat; but I labour to confute the fooliſh opinion of those, which attribute the whole

whole virtue thereof to his heat, I ſay the whole both inward and outward. For it is well known that ſalt is inwardly hot, and therefore it is accounted an help to the act of generation, and alwayes in extream cold weather, a man ſhall find ſalt to be as cold as water, or any ſtone. Whereupon we may eaſily gather that his heat could actuate nothing, unleſſe it were firſt ſtirred up by a counter heat wherein conſiſteth the ſeminal act; and therefore we muſt reaſon more deeply, and look to the eſſential cauſe that moves and works herein, and then we ſhal find out ſome hidden matter that is not ſubject to every mean conceit.

A fifth Element, and what it is.

And this is a fifth element (never known before to the ancient Philoſophers) which is a generative water, clear, ſubtile, mingled inſeparably with other waters, which water being alſo brought among common waters, doth indurate and congeal it ſelf with ſuch things as do happen to be mixed with it. And although the common Waters do mount aloft again by the attraction of the Sun, whether that the ſame be in Clouds, Exhalations, or vapours, yet nevertheleſſe the ſecond water, which I call a fifth element, is alſo carried amidſt the others, and when thoſe common waters run downwards, along the valleys, whether they be flouds, rivers, or ſprings, I ſay that in what ſort ſoever they deſcend, or in what place ſoever they ſtay, they do always frame ſome one thing or other, and moſt commonly either great ſtones, rocks, and quarries of ſtone, according to the groſsneſs of the matter which is ſtayed with it, and carries the form of his mold wherein it reſts, and this being ſo congealed, that common water is ſometimes drunk up in the earth, and deſcends lower, or elſe

elſe it is drawn upwards, and doth vaniſh away in vapours and clouds, leaving his companion behind, which he is not able to carry any longer. And thus is Marl ingendred, for before it was Marl it was a certain earth, into which both theſe waters had entred, and had repoſed themſelves for a certain time: during which reſt, the generative vertue became congealed, and the vaporative water paſſed away, and was drawn up from the other, and ſo the earth (wherein this congealed water did ſtay) waxed hard, and became white by the vertue thereof, being both wrought up into one body, whereby it comes to paſs that when this marl is ſcattered abroad, upon the arable ground, the ſeed which is ſown thereon doth not take of the ſubſtance of this marl, to help his vegetation, but doth rather glut it ſelf with this generative, and congelative water, which I call the fifth element, which generative water being once conſumed by often ſowing of the ground, the Marl becommeth unprofitable, as a ſign of ſome decoction finiſhed: the like is to be thought of all other dung and lime.

The uſe of the exhalative water.

It is alſo to be noted, that the ſeed which is ſown cannot make any attraction of this generative water, if the ſame were not alſo moiſtened with the common water. And that when the ground is moiſtened either with the rain, or dew that falls, the common water that deſcendeth together with the generative, ſtaies the haſty congelation of the other, whereby it comes to paſs, that corn and other ſeeds do keep themſelves green untill their maturity, and when they are ripe, and that their root ceaſes to draw or drink up any more thereof, the exhalative water flieth away, and the generative remains; and as the

the decoction in plants begins to perfect it ſelf, ſo the colour alſo changes, as it comes to paſs alſo in ſtones and all kinds of mettal. So as this fifth element, although it be a water, and mingled with other waters, yet it is the ſame which doth uphold both ſtraw and hay, and all kinds of Trees and Plants, yea, even men and beaſts likewiſe; and of this generative ſubſtance, the very bones both of man and beaſt are hardened and framed in their kind. And even as we ſee the pibble or flint ſtones which are formed and engendred of this congelative water, do endure the ſtrength of fire, and are not conſumed therewith, but rather vitrified; ſo in like manner this fifth and generative element being within the ſtraw and hay, cannot be waſted away; for if thou doeſt burn them, or any other wood in the fire, all the common water thereof will vaniſh into ſmoak, but this generative water, which hath ſuſtained, nouriſht and encreaſed both the ſtraw and hay, remaineth in their aſhes, and cannot be conſumed, but turneth it ſelf into glaſſe, being liquified in thoſe hot flaming furnaces, and the ſame ſo clear and tranſparent as the generative water it ſelf was before this congelation. But there is nothing that more reſiſts fire then the bones of divers beaſts, as I have often proved, when I have burned the bones of ſheeps feet, and ſo of eg-ſhels, which is a manifeſt argument, that they have drawn more abundantly to themſelves of this generative water then any other parts. And there is no doubt but there is great ſtore therof in the apple of the eye, which being continually moiſtened and accompanied with the other exhalative wate, is kept from being hardned into the nature of a ſtone. Neither is there any kind of ſtone which in his principal form is not clear and white,

and thoſe which are cloudy are ſo by accident, for that in their compoſition there hapned ſome earth or ſand to be congealed or hardned with their firſt matter. Nevertheleſs there is no ſtone ſo dark and obſcure, which by force of fire doth not become tranſparent at the laſt, becauſe that principal element, wherof I have ſpoken ſo much, makes all things elſe become tranſparent and fixed, as it is it ſelf in his firſt being. This I have written the rather to encourage thee to ſeek out Marl within thy own inheritance, to inrich thy barren grounds, that they may yeeld their fruit abundantly in their ſeaſons. And in ſo doing, thou ſhalt ſhew thy ſelf a good Husbandman, and become a pattern unto all thy ſlothfull neighbours, whereby they ſhall be forced to imitate thy good example.

How Marle was firſt found out.

Now concerning the finding out of this Marl, I think that thoſe which firſt hapned upon it, did not obtain this skill by any true Theorical imagination, but that by meer chance they did find the ſame without any ſeeking; as peradventure by the digging of ſome Ditch or other Trench about their ground, and being forced to throw up that which they had digged upon the banks of their arable fields adjoyning, and finding ſuch corn as hapned to be ſown upon theſe banks to be more freſh and rank then in any other part of the field beſides, they proſecuted this good hap of theirs further the next year, and ſo did ſpread the ſame over the whole field, and ſo by long experience, and in the end they found the ſame much more profitable then any other dung. Some others peradventure might happen on the ſame in ſeeking for ſprings, in like manner. Yet it is always to be noted, that this Marl muſt firſt be diſſolved throughout the

the ground before the ſeed can make any attraction thereof unto it ſelf, even as fleſh cannot purchaſe a defenſative againſt putrifaction by ſalt, until the ſalt be melted and made liquid.

How men may ſearch for Marle.

But for the more eaſie finding out of this Marl, I think it neceſſary that every man ſhould have a long Auger or Piercer, with ſeveral large bits which he may put on and take off at pleaſure, and with theſe he may ſearch at what depth he will in divers places of his land, always marking what ſeveral veins of earth he finds in the bit of the Auger, and of every ſeveral earth wh ch he draws up, he may make ſome trial upon the ground, unleſs he can be aſſured by the whiteneſſe and hardneſſe thereof, that he hath hit upon the right Marl, for then he needeth not to proceed to any further tryal.

And having once found the vein, he may lay it open in ſuch ſort as may be moſt convenient for the evacuating thereof. Now if there happen to be any quarry of ſoft ſtone between him and the Marl, he muſt firſt make his entrance through the ſtone with a piercing worm, and then having made way, he may ſeek further with his foreſaid Auger.

Colours of Marle.

Marl for the moſt part is white, yet in divers parts of France there is both gray, black, and yellow, and therefore we muſt not wholly reſt upon the colours thereof; for theſe other colours may become white by a longer decoction. And as there is a white Marl, ſo likewiſe there is a white clay, which I think will ſerve inſtead of Marl, eſpecially that fulling earth wherewith the Fullers uſe to ſcour out oyl out of their cloaths.

A white Clay.

Fullers earth.

That Marl is not of a fatty nature.

It is an erroneous opinion to think that Marle may be diſcerned by the feeling of the hand, as ſome

doe hold, and that it is to bee knowne from other moulds by the fattineſs or viſcouſneſs thereof, which is falſe; for if it were fatty, it would be impoſſible either for rain or froſt to diſſolve the ſame; for all oyly things do reſiſt and ſtrive againſt water; yea, we ſee apparently, that both Clay and Marl do help to ſcour out all greaſie and oyly ſpots, as Fullers can well teſtifie; and if Marl were of an oyly nature, it would conſume in the fire, but if we make any proof thereof, we ſhall find the ſame moſt violently to reſiſt the fire.

And in the latter end of this Philoſophical abſtract Mr. *Bernard* concludes thus, That Marl is a natural, and yet a divine ſoyl, being an enemy to all weeds that ſpring up of themſelves, and gives a generative vertue to all ſeeds that are ſown upon the ground by the labour of man. And here ends. Mr. *Bernard.*

A man would think that ſo learned a Theorick as this, in a matter ſo general, and neceſſary for the land of England, ſo plauſible to worldly wits, and ſet down in ſo plain and familiar terms, could never have been extant ſo many years together, with ſo little fruit & profit to all our lean and barren grounds, as (for ought that I can ſee or hear) it hath been hitherto; and ſo is like to continue, unleſſe ſome ſtudious Scholler, or other, will ſtep forth, and take our idle Farmers by the hand, and either lead them over ſhooes into one of Maſter *Bernards* muck-heaps, or elſe by violence thruſt them into one of his Marl-pits. For what eaſier courſe can be directed by the pen of any Writer, then is here delivered for the finding out of Marl? or what cheaper tools could the wit of man deviſe, then an hand, and a piercing Auger, to ſearch into the bowels of the earth for her marrow,

marrow and fatneſſe? Do we think that Nature is bound to caſt up the treaſures of her full gorge amongſt us, who will not vouchſafe one pipe of Tobacco upon her? *Effodiuntur opes* (ſaith *Ovid* unto all ſlothfull Husbandmen:) and therefore ſeeing we may have ſuch wealth for the digging, let us not ſpare the ſhovel and mattock, till we have found out ſome Marl-pits in our own demeſnes.

How to find out Marl and the uſe thereof.

For the veins of Marl are more in number, much longer and broader, and deeper then we think for; and although we find them not in one place, yet we ſhall happily find them in another. It is a ſmall adventure to hazard a ſhilling to gain a pound: It is no loſſe to ſet poor men on work, (which otherwiſe in conſcience, we being able and they being honeſt, we are bound to relieve) though they gain us nothing, our great poſſibility may eaſily countervail their ſmall charge. Regard not the colours of the mould, you ſee that Maſter *Bernard* he telleth you of a white, of a gray, of a black, and of a yellow Marl: And why may there not alſo be ſome other colours of Marl in our Countrey, which Maſter *Bernard* never knew? It is a ſmall matter to try the ſeveral natures of all the veins which you find in digging; you may prove of every kind a little, in divers places the firſt year, and ſo proceed unto greater tryal the next year, as your good ſucceſſe ſhall encourage you.

Colours of Marle.

Proportion of Marle.

And though you find but ſmall amendment in the firſt proof, yet practiſe again; for it may be you laid either too little, or too much thereof upon the ground: For too little of the beſt Marl can do but little good, and too much thereof hath been already found to be very hurtfull to the Corn. And therefore

therefore untill you have attained unto the very prick of proportion, learn first all the experience which you can draw from other men, and then prove what further perfection you can adde thereto your self. Examine the seasons of the year, in which it is best to lay abroad every kind of soyl, for if the same be of a hard and binding nature, then Master *Bernard* tells you, that it must be laid in the beginning of Winter, that first the frosts may make the same to moulder into small pieces, and so to become apt for solution, and then the rain which commonly doth fall more abundantly in the Winter then in the Summer time, may perfectly dissolve the same. If it agree not with one sort of soil, peradventure it will agree with another. It may serve an arable ground, and not a pasture ground; or a fenny, and not an hearby, or a clay ground, and not a sandy ground; Peradventure it may prove good for one kind of grain, and not for another. And therefore you must never rest till you have made a full tryal of all the inward veins of the earth, in all the seasons of the year, in all the degrees of proportion, in all kinds of grain, upon all sorts of ground, with all such like necessary circumstances, and so in the end you shall find out those differences, and make such observations to your self, as the sluggish and idle loyterers of our time (though they have the same matter to work upon) shall never be able to reach unto, or imitate.

Season to lay Marl abroad.

Upon several grounds.

In severall sorts of grain.

Circumstances.

The Fullers earth which Master *Bernard* here mentions in his title of Marl, and commendeth to the same end, I have not known at any time practised in England for the bettering of any ground; but by all presumption the same must of necessity be very rich, because it is full of that vegetative salt, so highly

Fullers earth.

ly commended by this French Authour, which appears in thoſe ſcouring effects, for the which it is divers ways had in uſe amongſt us; and if the ſame be to be had in any plentifull manner, I could wiſh that ſome exact proof were made thereof, according to the former circumſtances. And here I cannot omit the carefull induſtry of that ingenious, though unlearned old man; Who having long ſince cut off that unprofitable exchange of our Engliſh ſilver, with thoſe French and leaden trifles, hath alſo given himſelf to divers other profitable and ingenious practiſes; among the which he hath aſſured me of this one to be moſt true, that even the very clay which he digged up in Saint Georges fields, being laid upon his paſture grounds, which he there holds by Leaſe, did exceedingly enrich the ſame, inſomuch as he did never regard to ſeek after any other ſoyl. And this hath alſo ſome credit with Maſter *Bernard*, who affirms, that all Marl is a kind of clay ground, and it ſhould ſeem to differ onely in digeſtion from Marl. And in another place he ſets down his opinion of a white clay, which he found as he travelled in France toward Poictiers and Tours, that he held the ſame to be equivalent to Marl it ſelf. And it ſhould ſeem by all reaſon, that the like order is to be uſed therein in beſtowing it upon the ground, as is before expreſſed in Marl.

Clay inſtead of Marl.

I may not here omit to commend the ſoyl of the ſtreets, or reſidence and grounds of all Channels, Ponds, Pools, Rivers, and Ditches, and of all other pans and bottomes whatſoever, where any ſtore of waters do repoſe themſelves, but eſpecially where any abundance of rain water hath a long time ſetled, for that the congelative parts of theſe waters be full of

The ſoil of the ſtreets, & the reſidence of of all watry botto mes

of the vegetative ſalt of nature, as Mr. *Bernard* notes, who is verily perſwaded, that there is no other reaſon to be given of that hearty fruitfulneſs which the fallow grounds do gather again in time, but onely the generative part of the rain water, which falleth upon them ſo often, whileſt they remain unſowen with grain: for to imagine that the earth by quietneſſe or reſt alone ſhould become fat again without the miniſtring of any other nouriſhment or food unto it, were as much againſt all ſence and reaſon, as to think that a languiſhing patient ſhould in time recover his former ſtrength by keeping of his bed onely, without taking of any cordial or reſtorative broths for his comfort. Wherefore ſeeing there be ſo many pans and receptacles for waters in every ſhire, in one place or other, and ſeeing that nature alone miniſters matter enough for us to work on, but wants hands onely to bring things together, let us ſeek to help nature a little with our hands, and ſhe will return our labour again with an exceſſive uſury into our boſoms.

Mooriſh earth

There is alſo a kind of mooriſh earth, which being laid after 20 or 30 loads upon an acre, will amend, and better your paſture grounds a long time after.

Dung of beaſts.

I will paſſe by all the trivial uſes of Cow-dung, Horſe dung, folding of ſheep, Hogs-dung, Pigeons dung, and ſuch like, for that they are already known, and common in this land with every Countrey *Coridon*, yet I think it not amiſſe to ſet down ſome neceſſary obſervations in them, ſuch as I have partly drawn from conceited wits, and partly have imagined my ſelf by the contemplation of natures works. And therefore here I can by no means allow of the ordinary manner, in laying abroad our great muck-heaps, wherein Mr. *Bernard* tells us, that the winter

Muck-heaps how to bee made

rain

rain which falleth upon them, carries with it alſo a great part of their ſtrength, ſo as the upper part becomes very lean, and hungry, and is ſcarcely worth the carriage, and ſpreading abroad.

But I know that the Farmers of our land will anſwer me in this point, that it is too coſtly to build barns, or other coverts for Dung-hils; but my meaning is not to perſwade them thereto (although peradventure if we did erect a few ſtraight trees, or fir-poles, and make a looſe thatched, or boarded cap to cover it, which might ſlip up and down at what heighth we thought good, as they uſe in the low Countreys to make their barns (a pattern whereof ſtands to be ſeen near unto St. Albones, not far from Parkmill, in the backſide of one of my tennants houſes there) that ſo the goodneſſe of the ſoil would in a few years countervail the charge of our building) but rather that they would place the muck-heaps upon the foot of ſome hill (making a little ſquare receptacle of brick in the bottom therof) whereby all ſuch ſtrength and ſubſtance of the duug, as all the ſhowers of rain that fal, ſhal carry with them, might with a free diſcent be conveyed into this pit or ciſtern, ſo as the ſame in convenient leiſure might with ſcoops, and other ſhovels be continually turned upon the muck heaps, from time to time as it fel, whereby the greateſt part of the vegetative ſalt, which now is loſt in every Farmers yard or back-ſide, might be preſerved for the better manuring of the ground.

A covert for a Muck-heap.

A receptacle of brick.

Some be alſo of opinion, that it helps much to the bettering of our dung, if all the brine and powdered beef broth, which is commonly thrown away, were powred upon the muck heaps, thereby to multiply their ſalt. And Maſter *Barnabie Googe* will have all

the ſuds of his landery conveyed thereon, and the muckheaps to be covered with boughs, to the end that the Sunne may not draw away any part of the ſtrength thereof. And becauſe we are now entred into the moſt principal, and general practiſe of this land, whereby the greateſt part both of our paſture, and arable grounds are uſually bettered; it ſhall not be amiſs to ſet down ſome new, though a very eaſie courſe, how we may the ſooner bring our dung to putrefaction, and ſo thereby not onely obtain ſuch rank paſture as now we have, by reaſon of the ſame ſoil, but alſo that we may purchaſe a much ſweeter graſſe, or feeding for our cattel, then hitherto we have had, for that (as I conceive) is the ſpecial fault of the firſt crop, which our ground brings forth after it is newly dunged. And this common errour of ours (if I be not deceived) is eaſily helped, and that onely by making firſt a lay of dung of a foot in thickneſſe, and then a lay of earth upon the ſame, and then another lay of dung upon that earth, and ſo proceeding in the manner of *Stratum ſuper ſtratum*, till your muckheap be as large and high as you would have it.

How to rot dung ſpeedily

To have ſweet graſs at the firſt yeares dunging.

But this practiſe would always be performed, either upon the ground which we mean to enrich, or very near unto it, leſt that which we get in the goodneſſe of the graſſe, we do happily loſe in the charge of our labour, and carriage. And here it ſhall not be altogether unprofitable, to let all thoſe Gentlemen and Farmers, who are deſirous of ſome ſpecial good mold, for ſome ſmal purpoſes, to underſtand that after they have disburthened the ground, of this great muckheap of theirs, that if they will yet dig a foot and a half or two foot under the ſame, that

A rich Mold for Gardens and Orchards.

that by this means they ſhall obtain a moſt fat and rich earth, and very apt for divers plants, as alſo our ordinary Gardeners can ſufficiently witneſſe.

Thus much of the ſoil or dunk it ſelf, being diſperſed in his groſs body. Now a word or two of thoſe conceited practiſes, which I promiſed before. I have heard ſome ſtudient practiſers very confidently affirm, that if you ſteep your corn in water, the ſpace of certain hours (but I could never yet find them all agree in one time: for ſome limit 12 hours, ſome 18, and ſome 36 hours, you may prove them all and keep the beſt) in water, wherein good ſtore of Cow dung hath lain in imbibition for certain days, (which times you muſt alſo ſearch, if you mean to be an exact maſter) every day ſtirring the ſame once or twice together before you lay in your corn, and after this preparation you ſow the ſame (though in barren grounds) that ſo you ſhall purchaſe a moſt rich and plentifull crop with an eaſie charge. But this kind of practiſe I have heard both maintained and impugned as wel by reaſon as by experience, and that by men of good judgement on both ſides, although if I would ſet down my own experience herein, I muſt needs confeſſe I could never yet attain to any truth in this ſecret, or to make any apparent difference between the corn that was husbanded in this manner, and that which grew of it ſelf without any ſuch help; yet will I not for the credit of the Reporters) altogether diſcredit the invention, for that peradventure I might fail in the nature of the grain, or in the time of imbibition. And as it ſhould ſeem great ſtore of thoſe uſual receipts, which are common in our ordinary Books of ſecrets, is drawn from this ground, whereby they labour to alter and change the

Of ſteeping corn in dung water.

ſmels, taſts, colours, and vertues of many fruits, and plants, onely by ſteeping the ſeeds in ſuch aromatical waters, as they themſelves appropriate for ſuch uſes as they intend them; and therefore they tell us, that ſteeping of ſeeds in the infuſion of Wormwood, centuary, Coloquintida, and ſuch like; will defend them from worm-eating, which for the preſent time I do eaſily beleeve, but how then comes it to paſſe that theſe ſeeds bring not forth alſo bitter fruit, according to their infuſion? and yet it is generally thought, that the clove-gilliflower got his firſt ſcent from the Clove, which was conveyed into his ſlip; but this I hold for an erroneous opinion, and to be as falſe as old, for neither is there any Philoſophical and inſeparable combining of their two natures, performed in this groſs practiſe; neither can ſo ſmal a ſubſtance, being neither truly prepared, nor exalted before, extend it ſelf ſo infinitely from one ſlip to another, as we ſee daily perform'd in that ſweet & beautiful flower.

I have here yet one experience more to ſet down in this kind, which (becauſe it was the practiſe of a ſpiritual Lord, that died of late, and fel out very happily, as I have been credibly informed by one of his eſpecial Officers, who with divers others was an eye-witneſs of the ſame) although it vary not much from the former courſe, I will publiſh the ſame unto all poſterity, under ſuch credit as I my ſelf did firſt receive it. And therefore, whereas before you ſteeped your corn in the water, which had ſucked out the ſtrength or ſalt of the dung, you muſt now mingle your dung, your water, and your corn together in a great veſſel of wood, and you muſt ſtir the ſame well with an apt ſtaffe for the purpoſe, one whole hour at the leaſt: This work you may begin in the afternoon,

afternoon, and toward evening you muſt recontinue your firſt agitation for one half hour, or more; then let theſe ſubſtances repoſe themſelves all the night following, and in the morning, or ſometime the next day, you muſt ſuffer the waters to paſſe away by ſome tampion, according to the manner of the ſalt-peter men, and when the liquor is ſufficiently dreined, then mingle the corn and dung throughly well together, and after ſow the dung, and corn ſo mixed in a barren and hungry mould, and you ſhall have as rich a crop, as if the ground it ſelf had been dunged before. This experience was made in an heartleſſe piece of ground, which lacked alſo one tilth, and which no man durſt adventure to ſow with any grain and yet my Lord Biſhop did by this means attain to a moſt plentifull wheat harveſt.

A practicall diſcourſe upon ſalt.

Now let us proceed to the ſweeteſt, cheapeſt, and moſt Philoſophical Marl of all other, even that which both *Valetius* and Maſter *Bernard* have ſo cloſely, and Theorically handled, as that (notwithſtanding the one telleth us of the exceeding fertility that is found in ſalt waters, by that infinite generation, and multiplication of fiſhes, yea of *Venus* her ſelf, that *Primum mobile*, in the procreation of children, and the other of thoſe pleaſant grapes growing in the ſalt Mariſhes of *Xantoign*) yet neither of them have left us any aſſured means, how we may purchaſe any ſtore of this ſalt, whereby we may make any great uſe thereof. So as notwithſtanding we are now brought to the rivers of life, and to that goodly tree ſo laden with golden apples, yet here we are left with *Tantalus* to ſtarve and periſh for want of food. Yea M. *Bernard* himſelf, after that he had ſo ſweetly ſeaſoned our ears with his brackiſh Philoſophy, yet in

one place, (as if he had repented himself of his too much forwardnesse in these his secret discoveries, nay, as if he had the greatest secret of nature in hand) he tells us in plain terms, that it is not the common salt, but the vegetative salt which he so commends. Nay, that which is more, in the examination of the Judges censure, upon the grounds of condemned persons, wherein they would have their lands to be sowed with salt, in token of a perpetual barrennesse, he falters and staggers, and can find no reason to maintain their judgments, unlesse it were as he saith, in respect of the nature of some countreys, where salt was enemy to all seeds. Why how now Mr. *Bernard*? Is it possible, that you who could find out the means how to furnish us in all places, with new springs of sweet and delicate waters, where there was never any before, that could first find a fifth element, which nature had hitherto locked up in her own coffers, which could teach us the reason of all petrifying, vetrifying, and metalizing of earthly bodies, yea, who could so learnedly set down the generative reason of all vegetables, should be ignorant how to reconcile earth and salt together, or how to turn a common salt into a vegetative salt? Yet *Valetius* deals more plainly with us (according to that light which he had received) saying, that if too much or too little do in any one thing make an apparent difference in the effects, then surely of all others the same is most especially to be seen in salt; and so he would have the cursed effects of that sentence, to proceed from the excessive proportion and quantity of salt that is bestowed upon the malefactors grounds. But suppose that *Valetius* hath not onely aimed fair like, a Gentleman, but also hit the mark like a good Arch-

er

er in this, where is now this vegetative ſalt become, which Maſter *Bernard* ſo highly extols, or how ſhall we obtain any ſtore thereof for the inriching of ſo many acres of barren ground, as this Realm of *England* doth preſent unto us? Me thinks I am now in the midſt of a ſtop galliard, and were it not that I ſhould here offend ſo great a concourſe of people, as I have now gathered together in my own conceit, I could find in my heart to command the Violands to ceaſe, and ſo to break off in the midſt of a rough Cinquepaſſe. Nevertheleſſe craving pardon of all the ancient Phyloſophers herein, but eſpecially of Mr. *Bernard* (who if he had been diſpoſed could have eaſed me of this labour, and performed it much better) I will onely requeſt with *Sinon, Fas mihi Graiorum ſacrata reſolvere jura*, and ſo beſtow a new task upon nature, who will be ready to yeeld us great ſtore of the richeſt Marl-pits, and in ſuch as have not hitherto been diſcovered, but onely in Philoſophical terms to any nation, or country whatſoever: hoping thereby, that as the ſecret which I have now in hand, and ſeemeth almoſt incredible before it be diſcloſed, ſhall procure ſome further credit and belief unto the reſt of my inventions, whereof I have already given a taſte, by a publick impreſſion, and yet reſerve ſome few, till I find a better opinion conceived of Engliſh Artiſts.

Now then let us firſt examine, what eſſential difference wee can find in thoſe four elements, whereof all the inferior bodies do conſiſt? or whether they may be all reduced to one, notwithſtanding the manifeſt oppoſition that ſeems to be in their contrary qualities? And for my part I muſt here acknowledge that the beſt naturall Philoſophy that ever I could

could learn in this point, was neither out of Aristotles Physicks, nor Velcuries natural Philosophy, nor Garsceus meteors, nor out of any of the old Philosophical Fathers, that writ so many hundred years past; but that little which I have, I gathered it on the back-side of Moor fields, where by undoubted arguments, I did hear it maintained, that all those elements do onely differ in attenuation and condensation: so as earth being attenuated becomes water, and water condensate becomes earth; water attenuated becomes ayr, and ayr condensate becomes water; and so likewise ayr attenuated becomes fire, and fire condensate becomes ayr: and thus all of them spring from one root: which being admitted, is a manifest proof, that there is a great and near affinity between the land and the sea, where we shall find salt water enough for our purpose. And yet further we see that of the earth and water together are made one globe, so as a small matter will make them friends, being so nearly united together.

And now I may say that I am entred into a whole sea of matter, from whence I must fetch the greatest store of my vegetative salt; and if this storehouse fail me, I know not whither to repair for such plenty of salt, as I must be forced to use in this action. And because you shall understand that I am now in a right course, let us consider of a few experiences already performed in the like kind; which because at the first they were found out by meer chance, and not by judgement, the Authors of them could as yet never extend them to any general, or publick use; but have hitherto walked continually like petite Constables within their own precincts. Amongst the which, the first practise than ever I heard

heard of, was of a ſilly ſwain who paſſing over an arm of the ſea with his ſeed corn in a ſack, by miſchance at his landing fell into the water, and ſo his corn being left there till the next low water, became ſomewhat brackiſh, yet ſuch was the neceſſity of the man, as that he (notwithſtanding he was out of all hope to have any good ſucceſſe thereby, yet not being able to buy any other) beſtowed the ſame wheat upon his plowed grounds, by the adviſe of a Gentleman of good worſhip, from whence I received the report thereof, and in fine when the harveſt time came about, he reaped a crop of goodly wheat, ſuch as in that year not any of his neighbours had the like, and yet notwithſtanding (for ought that ever I could yet learn) neither he nor any other of his Countrymen would ever adventure to make any further uſe thereof, belike being perſwaded, unleſſe that the corn by chance fell into the ſea it would never fructifie. What ſhould I ſpeak here of him, that of his own mother wit ſowed a buſhel of ſalt long ſince upon a ſmall patch of barren ground at *Clapham* which to this day remaines more freſh and green, and full of ſwarth then all the reſt of the field about it? But this man had ſome more reaſon than the other, not to proſecute ſo chargeable a practiſe any further, for that he knew well that one buſhel of ſalt would countervail two loads of the beſt dung there, whereas the former practicer, might have had ſea water at will for the fetching.

Salt ſowed at Clapham.

I might here adde the daily, and uſual practiſe in the Weſt parts of this land, where the people to their great charge in carriage, do convey the ſaltiſh ſands, unto their barren grounds, whereof ſome of them do lie five miles diſtant from the Sea. And yet

Brackiſh ſands.

they find the ſame exceeding profitable, for that thereby their inheritance is inriched for many years together, and who ſeeth not that the whole ſtrength and vertue thereof conſiſts in the ſalt-neſs, for otherwiſe we might happily find ſome other ſorts of ſand that would alſo be equivolent unto this. But to ſet down one experience that may ſerve for a thouſand becauſe it conſiſts of nothing elſe but ſalt. So that here is no partnerſhip at all, no ace of hearts nor five fingers to be ſuſpected.

The brine of the ſalt-pits.

Before you ſow your ground, do but onely mingle two buſhels of bay ſalt, amongſt two buſhels of winter grain, and ſo diſperſe them together upon the ground, and you ſhall find a good increaſe of corn, and the land it ſelf much bettered, and cleared of weeds, as I have been very credibly informed. But of all others I wonder moſt of all at the ordinary experience which hath ſo long time in the view of many perſons, been yearly practiſed in the fields, near adjoining to the ſalt pits of *Nantwich*, where upon the fall of any great ſtore of land waters into their pits, being forced to empty and draw out all the freſh water which alwaies flotes upon the brine, and to beſtow the ſame in ſuch places as are neareſt, and therewith alſo emptying ſome of the brine with the freſh water, they find in time this earth ſo ſtrongly ſeaſoned with theſe brackiſh waters, that no ſoil or dung is comparable unto it, for the manuring of their ground. And is it poſſible, that ſo many ſharp and choice wits ſhould till this day neglect ſo rare, ſo rich, yea ſo ineſtimable a trial as this, and not one among a thouſand that hath rid from thence to *Weſtcheſter*, ſhould have been able to have carried the ſecret ſo far, but muſt ſo careleſly drop the ſame by the way.

But

But to come yet nearer to our purpoſe, what ſhall we ſay or think of the ſurrounded Level at *Erith*? I dare not report that exceeding fertility which I have heard commended in thoſe two breaches, even by the ſeveral Farmers thereof: and though we may in ſome meaſure excuſe our groſſe capacities, for not applying thoſe viſible effects of the brackiſh waters which had many years together repoſed themſelves in the greater breach, becauſe the ſame was but lately inned, yet what ſhall we ſay for the leſſer breach, which hath been won ſo long ſince? Was it not ſufficient to have buried ſo many thouſands of our Engliſh pounds, in thoſe Dutch and drunken deviſes about the gaining of the ground (in the time and charge whereof ſome Engliſh wits that I could name, did offer to make a great and gainfull accurration, and yet could not be heard, but that whereas nature her ſelf preſented in thoſe breaches, a full recovery of thoſe expences to ſuch as are ſtudious, that yet we ſhould remain as blind as Beetles, not once examining, from whence this abundant fruitfulneſs ſhould ſpring, or grow? Now I find that ſaying of the Philoſopher, as concerning nature, to be moſt true: that ſhe doth offer and diſcover her ſelf in the moſt plain, and uſual actions, wherein we do daily buſie our ſelves, and yet ſcarcely any man doth apprehend her. The ſilly country wench churns cream into butter with a ſimple ſtaffe, and in a plain veſſel, onely by ſtirring up the inward fire of nature in his own center, whereby it makes a true and Philoſophical diviſion of parts, yet who is the wiſer for it. Erith breaches.

But to return to our ſalt again, and to give ſome colour to this weak contemplation of ours, peradventure ſome men (and thoſe alſo not of the meaneſt

conceit) who having a continual eye upon the ſalt mariſhes, where every acre of ground is ſo little worth, do therefore utterly condemn the uſe of brackiſh waters, as the waſtfull deſtroyers of all generative vertue. Indeed I know, and have found it moſt true in my own experience, that if any vegetable whatſoever, have by miſhap taken any ſalt water, that the ſame is moſt unapt to be ſtirred up to any true or kindly workmanſhip, but the reaſon hereof I muſt conceal for a time, it ſhall now ſuffice to anſwer that other objection, which ſeems like a forceable Ram to beat down all the foundation and building which we have hitherto made. But this I may ſufficiently refel by that *Nimium* of *Valetius*, which is daily to be ſeen in thoſe marſhes, and makes the graſs thereof even brackiſh to all the cattel that feed theron, although in the manifeſtation, and whole diſcovery of the ſecret which I have in hand, the ſame is elſwhere more fully and plentifully anſwered.

What is then remaining, ſeeing that the ſalt of *Clapham*, thoſe Weſtern ſands, that brine of the *Cheſhire* ſalt-pits, the reſidence of thoſe brackiſh waters at *Erith*, do offer ſo lively demonſtration unto us of the undoubted fertility, which is ready to overflow our banks, if we will but onely give paſſage unto it: but that we do now and then ſuffer a voluntary inundation and deluge, by thoſe brackiſh waters of the ſea, upon ſome parcel of land that is adjacent thereunto? which after they have ſufficiently repoſed themſelves thereon, we may by convenient ſluces return the ſame again; and ſo leave the earth to her own workmanſhip, who by her inward heat and tranſmuting nature will in ſome reaſonable time, by way of putrifaction, convert that which was before

before a common ſalt, into a vegetative ſalt, ſo as although we had juſt cauſe before to fear the extream drying or burning nature of ſalt, yet now, when the ſame is made familiar, and as it were of one nature with the earth, it becomes a moſt inriching ſubſtance. But leſt (whileſt I go about to benefit the poor and honeſt Farmers of the land) I happen by theſe new deviſes to hurt and hinder them, againſt my will and honeſt purpoſe; I would wiſh them firſt to conſider adviſedly of the whole diſcourſe, and to read it over again and again, before they put the ſame in practiſe, leſt peradventure they take a ſword by the point, and ſo hurt themſelves by the weapon which was given them to defend their perſons. And let this be a general caveat unto them, that they begin with ſmall practiſes, and firſt upon arable grounds, before they proceed to paſture or meadow: and ſo being carefull in thoſe former circumſtances, which I have at large handled in the title of Marl, they ſhal no way indanger their eſtates nor hazard any great loſſe, before they attain their deſires. Neither would I have them perſwaded, that my meaning is, that they ſhould overflow any grounds, which either they have ſowed already, or mean to ſow preſently with their grain; but rather ſome waſt ground or other, which after it hath been glutted with ſalt water divers times, and then repoſed it ſelf a ſufficient time, might ſerve inſtead of Marl, or other dung to ſpread abroad upon their barren corn grounds; but how often the ſame ſhould be overflown, and in what time the earth will ſufficiently putrifie and tranſmute the ſalt, before it will be ſerviceable in this kind, I will not here determine. Yet ſince the ſame is ſo well performed near the

ſalt-pits where there is not any artificial obſervation at all made, I think him to be of a very groſs conceit, who after he hath conferr'd with thoſe of *Nantwich* in this behalf, ſhould not be able to effect the like in any parcel of land that borders upon the ſea, or any arm thereof; yet it ſhall not be amiſs for them to know the difference, that the brine of ſome of thoſe ſalt-pits doth hold one third, or one fourth part of ſalt, whereas the ſea water doth not for the moſt part contain above one eighteenth or twentieth part of ſalt, which would make a great difference betwixt them, but that much land water is alſo laded out of thoſe pits among the brine.

And now by this time I hope you are well furniſhed with ſalt at an eaſie price, as alſo with the means how to make the ſame of a vegetative nature. It were but in vain here to intreat of the nature of that ſalt, wherof the ſalt-peter men do gather a buſhel or two at the moſt, from 30 tuns of earth; and therefore how excellent ſoever the ſame be in his kind, it will not profit us much in this work, becauſe the ſtore thereof is ſo little. Now I will proceed to ſome other ſorts of ſoil, which be excellent in their kind, but moſt of them appropriate onely to particular places, & ſome of them not to be had in any great quantity, and therefore fitter for gardens, or for the trial of maſteries, then for the inriching of arable or paſture grounds, amongſt the which, I will alot the firſt place to the putrifaction of vegetables, becauſe there may ſome reaſonable ſtore be had in ſome of them, in certain places; and then to the calcination of them, whereby they are firſt reduced to aſhes, and after thoſe aſhes may be diſperſed on ſuch barren ground, as the proprietors of them ſhall make beſt choice of.

And

And for ought that I could yet imagine, I hold the brakes or Fern to be both the cheapeſt, yea moſt plentifull, and that which may beſt be ſpared of all the unneceſſary weeds that grow: and that you may ſooner rot and putrifie them, you muſt mingle good ſtore of earth amongſt them, or elſe make ſeverall bed or lays of earth or fern one upon another, till you have made as it were a large muckheap of them, and ſo let them reſt till they be wholly conſumed into a fine earth, or mold. Although I could name a Yorkſhire Knight, who onely beſtows the fern it ſelf in ſome good thickneſſe, throughout all the allies of his hop garden, whereby both the roots of his plants are kept the moiſter, and alſo he doth yearly gather a rich mold out of his allies, to amend and better his hop hills withall.

How to putrifie Fern ſpeedily.

And here I have juſt cauſe offered me to commend alſo the manner of poling of his hops, which he placeth in ſuch ſort, as that one plant may not ſhadow another, but that his whole garden receiveth the fulneſſe and ſtrength of the Sunne beams at once, whereby both his Hops are more kindly, and the bels of them much larger then in any other Hop grounds whoſe poles are erected and ſtand upright after our ordinary and groſſe manner. But becauſe my promiſe was not to deliver any skill at all in Hop Gardens, I will reſerve this concluſion with ſome other ſecrets in Hop grounds, not yet diſcovered or brought in publick uſe, for ſome apter occaſion, *ut ſemper novus veniam.*

New manner of poling of Hops.

And that I may not ſeem to have loſt my ſelf in the midſt of theſe brakes, into which I am now ſo deeply entred, I would have that which is here ſpoken of the Fern onely to be generally underſtood of all

all sort of plants or vegetables whatsoever, wherewith the earth seems unprofitably charged.

Hair. Divers also have found singular profit in the hair that is gotten from the hides of beasts being thinly laid upon the ground, and suffered to putrifie.

Now as we may by the putrefaction of the fern, & other plants, in divers parts of this realm make the same very profitable unto us for such country purposes as are here intended; so likewise by calcination of them, or burning them to ashes, we shal find the like and self-same effects, as divers shires in *England* can already testifie in their own experience, who consume their fern, stubble, straw, heath, furs, sedge, bean stalks, and sometimes the very sword, and swarth of the ground to ashes: and these according to the store of salt which their ashes do contain, do either for a longer, or a shorter time inrich their barren grounds.

Calcination of vegetables.

Malt dust. And because that nature may be known to be so cunning an artist, as that she hath not made any thing in vain, the wit of man hath also found out som good use this way, even of the dust and tails of the Malt, which are left in malting, for these being also returned upon the grounds from whence they came, do help in som measure to hearten them again. The proportion of them is about three quarters to an acre of ground, but this secret extends only to malting towns and there also but to a few acres of ground, yet I thought good to insert the same amongst the rest, as a member of that body, which gives unto each subject his generative, and fructifying vertue.

The earth in willow-trees. I would greatly commend that fine and delicate mould, that is found in the bodies of old large and hollow willow trees, that are putrified within, if it were

were as plentifull to be had, as it is rich in ſubſtance, yet happily how ſmal the ſtore thereof be, it ſhal not be loſt for the gathering, after the beſt uſes thereof be found out, and known among the ſtudious practiſers of our age.

And here becauſe of all other places, I would be loth to leave the moſt renowned City of *England*, wherein I was born, without ſome further and ſweeter helps for the barrē grounds, then ſhe hath been hitherto acquainted withal, and for that I daily do ſee, a moſt rich commodity trampled under foot, and contemned of all men, I hold my ſelf even bound in conſcience, for my countries good, not to hide the ſame any longer, but rather to publiſh all ſuch profitable uſes thereof, as I conceive my ſelf or have learned of others, together with a full ſatisfaction of thoſe objections; which have been grounded upon the long diſcontinuance thereof with the Low Country men of *Flanders*, who are generally accounted the moſt skilfull and painfull husbandmen of all *Europe*. The matter which I mean, is the waſt ſope aſhes which our Sope boilers for the moſt part, will give for the carriage, and ſome of them alſo do pay for the carriage, when they are conveyed from their houſes: though ſome few of them make a ſmall benefit of theſe aſhes.

And here it ſhal be no ſhame for us to acknowledg thoſe Flemmings to be our firſt teachers, in the uſe of them: nay, it is rather a great ſhame, that we cannot be provoked to our own profit, by the example of others, who have ſo many years inriched themſelves thereby, and have of late years to their great loſs, been forced to leave them. As concerning their good opinion, and profitable uſe of them,

I think we need no further argument to maintain, then the price which they gave for them to the Sope-boilers, which I have credibly heard, was 3 s. or 4 s. a load, besides the carriage of them into their own country.

And yet if the infinite extension of them, the easie charge in bestowing of them, together with their especial nature in suppressing of weeds, be wel weighed and considered, we shall find them to be much cheaper of that price then any common soil, or stable dung whatsoever. For how cheap soever our other soil be, yet the transposing thereof from place to place (if the land lie at any distance) makes it so chargeable, that the poorer sort of Farmers in many places of this realm, will scarcely afford the carriage thereof to their grounds, though they might have the same freely given them; whereas two load of these ashes or thereabouts, being sufficient for an acre of arable ground, is soon bestowed by the labor of one man, without the help either of cart or horse. For their manner about *Bridges* was, after they had sowed the same with grain, to strow these ashes thereon with their hands till the ground did seem to have gathered a whitish garment upon it, and that was sufficient for that year; and by this practise they might sow the ground yearly without leaving it fallow at any time: Yea, their ground being helped in this manner, would yeeld them a most rich crop of Flax, whose seed of all other doth burn and pill the ground; for so saith the Poet, *Vrit enim lini semen*. It is also with good probability to be conjectured, that these sope ashes do not onely inrich the ground, but do also help to destroy worms, weeds, and rushes, that do spring up in moist and barren grounds;

grounds; then let every wiſe man imagine what may be ſaved thereby in that chargeable weeding of woad. *Qre.* If broom or fern may not be deſtroied by this means; and I make no doubt of broom, if the ground were firſt plowed, and after theſe aſhes ſcattered upon the ſame.

And becauſe I would not rely wholly upon the outlandiſh experience of thoſe aſhes, (leſt otherwiſe it might happily be objected, that they are not agreeable with our ſoil or climate) I have thought good to prefix in the front of this Treatiſe, the portraiture of an Ear of Summer Barley, being drawn truly and ſharply, according to the length and breadth thereof; which together with ſundry others of the ſame proportion (as by divers eye-witneſſes of good credit, I can prove and juſtifie) did grow this Summer at Biſhops-hall, where I dwell, to the great admiration of the beholders: the ſtalk of which together with the Ear was meaſured to be an Ell, and 3 inches in length, from the ground to the ſummity thereof. And this I did in a barren ground, by the help and means of thoſe ſope aſhes, God bleſſing my labours therein.

I have alſo this year found the like ſucceſs thereof in paſture ground, by the means aforeſaid, *Qre.* If that ſope aſhes will not inrich the ground for woad, as that thereby we may continue our yearly ſowing upon the ground, without any intermiſſion thereof. *Qre.* Alſo, if the ſame be not very profitable to be laid amongſt the Hop-hills, to make the plants to flouriſh and proſper the better. For in Lombardy, they like ſo well the uſe of aſhes, as that they eſteem it much above other dung, thinking dung not meet to be uſed, for the unwholſomneſſe thereof. This out

of Maſter *Barnabie Googe*, who alſo affirmeth in another place of his book of Husbandry, that if we will have the Artichoke to proſper well, we muſt dung the ſame continually with aſhes, for that kind of fruit delights therein.

And to make the ſame out of all queſtion, I know a grave and well experienced Citizen of London, who hath made often tryal of them, and hath found very good ſucceſſe, by applying them in the Winter time to the roots of his own Artichokes. Now if we will alſo look into the reaſon hereof, we ſhall find it to be nothing elſe but the ſalt of theſe aſhes, which notwithſtanding all that ſharp Lee which the Sope-boiles have drawn from them, do yet remain much ſtronger, and more ſaltiſh then our beſt aſhes, that have not as yet been put to any uſe; and this will eaſily appear in ſome of thoſe other uſes, that follow hereafter. All which being well conſidered, I do hold the ſame better for Winter then Summer corn, and very profitable for all cold and moiſt paſture, and meadow grounds, ſo as they be laid upon them about the feaſt of All Saints, that the great ſhowers in the Winter time may make them of an eaſie ſolution; whereby the graſs may have a more ſpeedy attraction of their vegetative ſalt unto it.

Some be of opinion that theſe aſhes be made for the moſt part, of that tree which carries a ſmall leaf like unto our Oak, and whereof the Dainſick Wainſcot is made. And ſome others do commend another tree, that ſomewhat reſembles our witchen Elms, of whoſe boughs and branches, being burned, they gather theſe aſhes. But it is moſt certain, that they are not the aſhes of any one tree, but of divers that are conſumed together, as they grow in ſome great wood,

wood. Now theſe aſhes by a more violent kind of fire, being forced to a fuſion, whereby they cake and clod together, are then called by the name of Sope-aſhes. But how then commeth it to paſſe, if there be ſuch ſalt and ſtrength remaining in theſe waſt aſhes, that our Flemmings (who will not loſe ſo much as the parings of their nails, much leſs the uſe of ſo rich a commodity) ſhould wholly abandon them, and for ſo many years together diſcontinue all their trafique and bargaining with our Sope-boilers? It ſhould ſeem by all likelihood that though for a few of the firſt years, they found ſome heartening thereby unto the ſoil and ground whereon they were beſtowed, yet in proceſs of years, that theſe aſhes being yearly renewed upon the ſame land, did in the end leave ſome hard or barren cruſt, or *caput mortuum* behind them, whereby the ground became either for a long time, or wholly unprofitable ever after.

Theſe objections being throughly anſwered, and confuted, I hope I ſhall find an eaſie ſute of it to intreat all our London borderers, who do occupy thẽſelves in the affairs of Husbandry, to ſtep into the Dutch mens rooms, and to neglect no longer ſo rich and ſo bountifull an offer. Neither yet will I here rely upon thoſe late troubles and turmoils of the low Countreys, which hath been means to cut off a great part of the intercourſe between them and us, and to make them almoſt unwilling to perform any profitable practiſe for their own good, leaſt the enemy ſhould like a drone Bee devour their honey: nor yet on any new exaction that hath been demanded of thẽ upon the tranſporting thereof, whereas in times paſt they did carry them freely away for ballift; but I wil only at this time urge that countermanding priviledg

firſt granted upon a colour or pretence to have imploied them very profitably upon the making of ſalt Peter, and brimſtone within this realm, whereby all the Sope-boilers were prohibited from the ſale of them to any ſuch as would tranſport them, although the Patentees could never as yet with all their chimical skil, draw out or ſeparate one pound of Peter, or brimſtone from them. And for my part I am undoubtedly perſwaded that their firſt purpoſe was no other (however the ſame was masked, or diſguiſed in ſhew) but onely to force the Sope boilers (after they had procured a general reſtraint) to grow to compoſition with them for ſetting them at large again, which appeared moſt manifeſtly to be ſo, for that in the end they demanded a certain rate upon the tun, which they denied, and thereupon the firſt diſcontinuance of them grew betwixt the Flemings and the Sope-boilers. And thus I hope I have removed this ſtumbling block out of my Country mens way, whereby they may begin a freſh practiſe of them, and thereby make ſome uſe of that Patent, which hath by this time gotten a ſound ſleep, and is now awaked in a good hour.

And as concerning any bad accident that they ſhould in time leave behind them: their melting and ſoluble nature, whereby in one years ſpace they are wholly conſumed with thoſe ſhowers, & froſts that overtake them, is a ſufficient argument to convince all doubts that can poſſibly be objected this way. But now to ſome other uſes of them: I do find them much better and cheaper then the Maſons duſt for the ſcouring of our trenchers, and other wooden veſſels, and this can our Dutch liskins, and Kitchin maids well approve, whoſe dreſſors, ſhelves, and molding-boards,

boards are much whiter and cleaner kept, then thoſe which are waſhed, and ſcalded after the Engliſh manner, upon which reaſon they muſt of neceſſity be very ſerviceable for waſhing of all our wooden floors either of Deal, or Elm to cleanſe them of all their greaſe, ſpots, or ſoil whatſoever; and I make no queſtion but that we ſhall find them very excellent for the ſcouring and cleanſing of our glaſs windows from all the ſteins, filth, and cloudineſſe; that makes them in time ſo darkſom unto us. I will paſs over the uſe of them in the paving of the ſtreets, and laying of bowling allies, wherin many hundred loads are yearly conſumed in *London*, and the Suburbs round about it. But I may not omit that excellent and ingenious practiſe, of that skilful and ancient Sope-boiler, who looking adviſedly into their binding and knitting nature, hath to his great credit erected a fair, a ſtrong and coſtly building of brick, in the mortar whereof, he beſtowed good ſtore of his own ſope aſhes, which to this day continues firm and ſolid without any ſhew of ill accident happening by theſe aſhes as any other building, whoſe ſtones were laid onely, with lime and ſand. By whoſe good example many other alſo of latter times, have occupied many hundred loads of them for the ſame purpoſe, and would have ſpent many thouſand loads of them ere this day, but that they find this mortar ſomwhat rough in the laying, and more ſharp and fretfull to their fingers then their uſual mortar which they daily occupy. But if I were able to be a builder my ſelf, I would ſoon remedy theſe two ſlender faults, whereof the latter I hold rather for an excellent quality, and moſt appropriate for the nature of mortar it ſelf, rather then a fault. And yet for the good wil which I bear to al the excellent

excellent uniform builders of our time, and becauſe thereby I ſhall give ſome increaſe of labour to the poor and painfull people, that may be imploied therin, I will ſet down the beſt adviſe that I can in this behalf, the ſame being ſuch as I dare make warrant thereof upon my credit, being carefully handled. As concerning the roughneſſe of them, who is ſo blind that ſeeth not which way to remedy the ſame? For it is rather a work of labour then of skill? For they being either ground or ſtamped into a fine powder, before they be mixed with the ſand, will ſoon be brought into a ſmooth temper.

And here we have no need to fear the charge that will ariſe thereby, for I dare undertake that the profit of one days labour will anſwer the charge of three mens wages, in the difference of price that will be found between one load of theſe aſhes, and one hundred of Lime. The ſharpneſſe wherewith they offend the Bricklayers fingers, may in ſome ſort be avoided by wearing of gloves, (without the which they ſeldome lay any brick at all) to avoid the like effects which they find in the lime. But for an aſſured help therein (if the ſame be ſuch as cannot be indured of workmen) let theſe waſt aſhes be re-imbibed with more water for ſome reaſonable time, till ſome further part or proportion of their ſalt be divided from them, and then without all queſtion they ſhall find them gentle enough, and much of their fretting nature taken from them. See the whole art of making of the mortar ſet down, *Numb.* 92.

For buck cloaths.

The laſt, though not the leaſt uſe of theſe aſhes, which I purpoſe to diſcover at this time, is to make them ſerviceable inſtead of common aſhes, both for the whiting of linnen, as alſo for the making of buck lee,

lee, which are now grown to an exceſſive price, partly by the great expence of them in ſalt Peter work, but principally through our lately ſparing of wood, and charcole whereby theſe latter times do not afford the like ſtore, or plenty of them as we were accuſtomed to have in the days of our predeceſſors. And I am the rather induced to conceive wel of them in this courſe, by that ancient and common experience, which the whitſters, and Dutch laundreſſes have long ſince begun, and do as yet continue among us, for the ſpeedier whiting of yarn with them, which they do moſt confidently affirm to become more white by this means by once bucking of it, then by ſundry times with our common and ordinary aſhes, and if they ſhall be found over ſtrong, and ſharp for our linnen (which is the onely fault that I could ever hear them charged withall) I doubt not but that by the aforeſaid manner of imbibition, they may be ſo weakned, as they ſhall eaſily be reduced to the perfect ſtrength of our ordinary aſhes: or elſe for our better ſatisfaction herein we may uſe ſuch proportion of our aſhes among them, as may beſt bring them to be of one nature & quality with them. Thus much by way of digreſſion of the ſeveral uſes of theſe waſt aſhes, wherein though I ſtraied a little without the bounds and limits of husbandry, yet I hope I ſhal be found ſufficiently within my text, for that all theſe particular uſes may ſeem to maintain and fortifie their fructifying nature the more, becauſe they are wholly drawn from that vegetative ſalt, wherewith the ſame above all other ordinary dung whatſoever, is moſt fruitfull and abounding.

Thus much of vegetables, now a touch of Animals, and ſo I wil knit up this diſcourſe, leaving thoſe

Salt of Minerals.

meſtimable and hidden treaſures of the minerals, and their ſalts, tending alſo this way unto the deep Lulliſts, and true Engliſh Paracelſians, who no doubt, if they lived in thankfull times, would begin where I have left, and not onely have publiſhed their Philoſophical ſalt, which nature ſhould have been forced to maintain for ever, but would alſo have laid open a very large vein of golden Marl, whereby they would have ſo multiplied that radical moiſture of ſundry plants, as that in ſome good meaſure they ſhould have recovered that firſt perfection wherein they were created, and which they loſt by the fall and diſobedience of man. I am credibly informed (and the reaſon thereof is ſo apparent, as that none but he who will deny the concluſion of a Syllogiſme can deny the ſame) that after ſuch time as the coaſt-men have by expreſſion, and other apt means, gotten that kind of train oyl, which they call a Pilchard oyl, from the fiſh of that name, that they alſo beſtow that which remains of the Pilchards upon their lean and hungry grounds, the ſubſtance whereof, by putrifaction, becomes a moſt rich and fruitfull mould, and ſuch as gives heart unto the earth for many yeares together.

Pilchards putrified.

Garbadge of Fiſh.

And it is no way to be doubted, but that the carcaſes and garbage of all other fiſh, would produce the like effects, for that they muſt of force reſemble the nature of the place wherein they breed and live, whereof we ſhould have had a ſufficient trial before this, but that there is no ſuch ſtore of any other fiſh ſo fitly preſented unto us for this purpoſe as the Pilchard, which ſerves to no other uſe, after ſeparation made of the oyl, but onely to ingender this ſalt dung, which we have in hand.

Now

Now concerning the Bloud, Offall, and Entrails of beasts, every Butcher about *London*, who for the most part hath a garden for that purpose, to bury the same in, to avoid offence, can sufficiently testifie. And I have heard the bloud of beasts commended in high terms, for the forwarding and prospering of all poor and backward Vines, so as withall it be tempered with lime, which is used to no other end, but only to destroy all the worms; as otherwise the bloud would ingender in the earth, which would in time consume all the sap and marrow that lieth in the roots, and in the end destroy both the Root and the Vine. Yet this caution I will give before I conclude, that he which tempereth lime with the bloud, must suffer the first accidental heat, which happens in the slaking thereof to pass over, before he apply the same to the root, either of the Vine or any other plant, lest that unkindly and unnatural heat, (which for the time is stirred up in the composition) do happen to burn and dry up that radical moisture, which will hardly be restored again by any outward art or means whatsoever. Bloud, Offal, and Entrals of Beasts.

Claudite iam rivos pueri, sat prata biberunt.

305. *The manner of drawing or extracting the Oyles out of Herbs or Spices, with all necessary circumstances.*

A Copper body, or Brasse pot, with a Pewter Limbeck, and a glasse Receiver, are all the necessary instruments for the extracting of these Oyls, and the greater the pot or body is, and the more you distil at once, you make both the lesse waste, and the Oyls will be in lesse danger of adustion.

Let the middle pipe of your Limbeck, through which your oyl and water aſcends, be as large again as the ordinary pipes are, and much ſhorter, and let the bucket, or cooler in the head, contain as much more cold water as our ordinary Limbecks do.

If you have cauſe to draw much oyl at once of one ſort or kind, then uſe the firſt water again for the *vehiculum* in your ſecond drawing, becauſe the ſame hath already received his glut of the oyls, and will not be ſo hungry to devour your oyl as new and freſh water, that hath not been uſed to the ſame purpoſe before.

The water in the cooler may not boil; but you muſt change the ſame ſo often as it grows ſcalding hot, and put cold water in the place thereof.

You may begin your diſtillation with a pretty ſtrong fire until the oyl begins to aſcend; but afterward let your fire be ſo temperate, as that your pipe that runneth into the Receiver do never blow, but onely drop apace, or run trickling down the Receiver.

Some uſe to macerate, or infuſe the ſpices, the night before they diſtil, luting the Limbeck to their Braſſe pot, or Copper body; the beſt uſe thereof is in my conceit, that the paſte or lute will be ſo much the drier before they begin to work, but I think they gain not any more oyl by that practiſe. And yet a Neopolitan promiſeth to double the oyl of Anniſeeds, by macerating them ten days before diſtillation.

The flowers of Sage, Time, Roſemary, Lavender, &c. yeeld more oyl then the leaves, and the ſeeds more then the flowers.

To

To every pound of ſeeds or ſpice, and a gallon of fair water at the leaſt.

Beat your ſeeds and ſpice ſomewhat groſsly, before you put them into your pot or body.

All ſuch herbs whereof you mean to draw any oil, would be laid abroad in the air to dry, five or ſix days before you draw any oil from them; for ſo you may diſtil both more at once, and alſo you ſhall have more ſtore of Oil.

Thoſe herbs which are hot either in ſmell or taſt, will give their oil in this manner in more plenty then thoſe which are of a mild or gentle ſmell or taſt: as the ſweet Marjoram, Roſe, &c.

Moſt of your Oils wil float on the top of your water, yet the Oil of Cinamon and Cloves wil fall to the bottom, in the manner of a *Balſamum*; and ſome hold it for one true mark of a natural *Balſamum*, it being poured into another Oil, it ſinks to the bottome.

Your paſte muſt conſiſt of Bean flower, or other courſe flower tempered with water onely, or ſome whites of eggs well beaten, and during your diſtillation, you muſt have ſome paſte ready to ſtop all ſuch breathing places in the joynt, whereat any wind ſhall iſſue.

Let your Receiver, being of Heſſon glaſſe, contain two gallons, or three pottles; and for your Receivers you may chuſe thoſe glaſſes which they call bodies, when they are once cut off with hot irons, and fitted to their helms.

For the moſt part you ſhall have all the oyls of your herbs or ſpices to aſcend with the firſt pottle of water; nevertheleſs, for the more ſurety, you may draw off a gallon, and prove what you can gather out of the laſt pottle.

You may divide your oyls from your water, by putting the water and oyls being temperately warm, either into a large head that hath a ſhort pipe, or for want thereof into a great glaſs funnel, ſtaying your finger at the bottom of the pipe, till all the oyl do flote above the water (except in cloves and cinamon) and then letting the water to have a gentle paſſage by lifting up your finger a little, untill you ſee the oil ready to run out with the reſt, which you ſhal eaſily perceive by the difference of their colours, and then ſtop the hole with your finger again, and receive the oyl into a ſeveral glaſs by it ſelf.

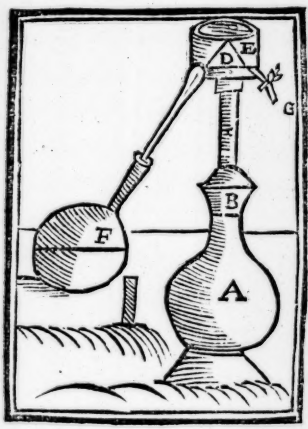
When you have divided the oyls from the waters, then may you rectifie or purifie them in this manner. Put all your Oyl that is of one ſort into a glaſſe body, and hold the ſame carefully in ſome hot water, moving the ſame up and down at the firſt, leſt you break your glaſs, untill all the water be evaporated, and that you perceive the oyls to become of a clear and tranſparent colour, and then keep them in apt glaſſes. Moſt of all theſe oils will laſt exceeding long, and to ſay truly, I know not how long, for I have not found any of them to fail, or loſe their grace, except the oil of Anniſeeds. But ſome inſtead of clarifying in the manner aforeſaid, do uſe to rediſtil them again in ſmal bodies, and heads of glaſſe with ſome of the firſt water, and ſome draw them from Roſe-water. Note that in this rectifying by aſcenſion you ſhal loſe a great part of their tincture; and if I be not deceived, a great part alſo of their ſtrength & virtue.

If you have cauſe to draw many oyls one after another, having but one Limbeck for them all, let the Oil of Anniſeeds be one of the laſt which you draw, becauſe it will ſeaſon the Limbeck ſo ſtrongly, that you

you ſhall hardly get out the ſcent, but with great labour. And for the ſweetning of your Limbeck upon every change of ſtrong oyl, you may ſet the Limbeck looſe upon the pot of water or Copper body, and ſo urge up with fire, a great quantity of water out of your pot, till you find the ſcent of the laſt oil to vaniſh; or elſe put ſome dry roſe-leaves, or ſweet Marjoram leaves into your water, and then make fire, as before.

Let the paſſage of your water that ſtandeth ſtill in the cooler, be very large whether it be cock or tampion. Some do empty their cooler with a long crooked pipe, and ſet the ſame on running by drawing the water down with their breath a little at the firſt. It is very requiſit to have veſſels of cold water ready at hand to pour in preſently upon the emptying of your cooler, or Bucket; and if the ſame Veſſel be of equal reception with the Bucket, you ſhal find your labor the eaſier. I know ſome that to avoid the continual labour of filling and emptying of their cooler have placed a large veſſel full of cold water in ſuch manner, as that the ſame by turning of a cock may run dropping continually into the cooler: and in like manner the Cock that is fixed to the cooler may deliver as much water into another veſſel as it received from the uppermoſt.

Some



Some hold opinion, that the beſt drawing of all vegetable Oils, that will congeal in cold weather, is in the Summer, or Spring time, but a workman wil both draw them and divide them at all times of the year.

Let there be always one third of your pot, or copper body empty, that there may be ſufficient room for the ſpirits to play in.

106. *How to Rectifie the aforeſaid Oyles.*

WHen you have gathered ſome ſtore of oyl together, put the ſame into a ſmall glaſſe body, or cucurbite, ſetting the ſame in a gentle Balneo, till all the water be evaporated from the Oyl, and that the Oyl become of a moſt clear and bright colour. This manner of rectifying is uſed in the extracted Oyls of Spices, Seeds and Flowers. But if you would rectifie either Oyl of Amber, Jet, Wax, or any of thoſe heavy and fatty Oyls which muſt be urged up with a ſtrong fire, then your beſt way is to pour the Oyl upon a good quantity of Roſe-water in a glaſſe body, luting a helm unto it, and ſo by rectifying the ſame often from Roſe-water, a great part of that offenſive and

and aduſt ſmell, which they purchaſe in their diſtillation, will be taken away.

107. *Divers ſpecial uſes of the aforeſaid Oyls not heretofore publiſhed.*

TO commend them either for their medicinable and known vertues, or for their printed qualities were but loſt labour, and therefore I refer all ſuch as be deſirous to read them at large, to the plentifull diſcourſe concerning that matter, written by Doctor *Geſnerus*, in a book intituled, *The Iewel of Health*, and Engliſhed by Mr. *Baker*. But of thoſe other more rare, and conceited uſes, which either I have found out by mine own experience, or learned of others; I will here give ſome taſte unto all the true lovers of learning. And thoſe who are deſirous to make a trial of theſe practiſes, may repair to Maſter Demiſh, that ancient and expert Chimiſt dwelling near the Glaſs-houſe, at whoſe hands they may buy any of the aforeſaid Oyls in a moſt reaſonable manner.

108. *Divers ſorts of ſweet or hand waters made ſudaenly, or* ex tempore *with the ſaid Oyls.*

FIrſt you ſhall underſtand that whenſoever you draw any of the aforeſaid oils of cinamon, cloves, mace, nutmegs, or ſuch like, that you ſhall have alſo a pottle, or a gallon, more or leſſe, according to the quantity which you draw, of excellent ſweet waſhing water for your table, yea ſome do keep the ſame for their broths wherein otherwiſe they ſhould uſe ſome of the ſame kind of ſpice; but if you take

three,or four drops of the ſame onely of the Oyl of Cloves, Mace or Nutmegs,(for Cinamon Oyl is too coſtly to ſpend this way) and mingle the ſame with a pint of fair water, making agitation of them together a pretty while in a glaſs having a narrow mouth till they have in ſome meaſure incorporated themſelves together:you ſhall find a very pleaſing and delightfull water thereof to waſh with, and ſo you may alwaies furniſh your ſelf of ſweet water of ſeveral kinds, before ſuch time as your gueſts ſhall be ready to ſit down. I ſpeak not here of the oil of Spike which will extend very far this way,both becauſe every man likes not ſo ſtrong ſcent, and for that the ſame is elſewhere already commended by another Author. Yet this I muſt needs acknowledge to be the cheaper way, for that I aſſure my ſelf there may be five,or ſix gallons of ſweet water made with one ounce of the Oil which you may buy ordinarily for a groat at the moſt.

This way you may alſo make an excellent ſweet water for a caſting bottle. Take three drams of Oyl of Spike, 1 dram of Oyl of Time, 1 dram of Oil of Lemmons, 1 dram of Oil of Cloves,then take 1 grain of Civet, and 3 grains of the aforeſaid compoſition well wrought together, temper them wel in a ſilver ſpoon with your finger,then put the ſame into a ſilver bowl, waſhing it out by little and little, into the bowl with a little roſe-water at once, till all the Oyl be waſhed out of the ſpoon into the bowl, and then do the like by waſhing the ſame out of the boul with a little roſe water at once, till all the ſcent be gotten out, putting the roſe-water ſtill in a glaſs when you have tempered the ſame in the bowl ſufficiently. A pint of roſe-water will be ſufficient to mingle with the

the ſaid proportion; and if you find the ſame not ſtrong enough of the civet, then you may to every pint put 1 grain and a half, or 2 grains of civet, to the weight of 3 grains of the aforeſaid compoſition of oils. If you diſtil bruiſed cloves with fair water onely in an ordinary leaden ſtill, you ſhall receive very good waſhing water for your table; and the charge thereof will not exceed 3 pence, or 4 pence the pint. All theſe ſeveral ſweet waters I have often proved.

109. *How to make ſundry ſorts of moſt dainty Butter with the ſaid Oyls.*

IN the moneth of May it is very uſual with us to eat ſome of the ſmalleſt and youngeſt ſage leaves with Butter in a morning; and I think the common uſe therof doth ſufficiently commend the ſame to be wholſome; inſtead whereof all thoſe which delight in this herb, may cauſe a few drops of the oyl of ſage to be well wrought or tempered with the Butter when it is new taken out of the churn, until they find the ſame ſtrong enough in taſte to their own liking: and this way I account much more wholſome then the firſt, whetein you ſhal find a far more lively and penetrative taſt, then can be preſently had out of the green herb.

This laſt Summer I did entertain divers of my friends with this kind of butter amongſt other countrey diſhes, as alſo with Cinamon, Mace, and Clove butter (which are all made in one ſelf ſame manner) and I knew not whether I did more pleaſe them with this new found diſh, or offend them by denying the ſecret unto them, who thought it very ſtrange to find the natural taſt of herbs and ſpices conveied into

butter, without any apparent touch of colour. But I hope I have at this time ſatisfied their longings. *Qre.* if by ſome means or other you may not give a tincture to your cream before you chern it, either with roſe leaves, cowſlip leaves, violet or marigold leaves, &c. and thereby change the colour of your butter. And it may be if you waſh your butter throughly wel with roſe water before you diſh it, and work up ſome fine ſugar in it, that the country people wil go near to rob all Cocknies of their break-faſts, unleſſe the dairy be wel looked unto. If you would keep butter ſweet and freſh a long time to make ſops, broth or caudel, or to butter any kind of fiſh withal in a betterr ſort then I have ſeen in the beſt houſes where I have come. then diſſolve your butter in a clean glaſed, or ſilver veſſel, and in a Pan or Kettle of water, with a ſlow and gentle fire, and pour the ſame ſo diſſolved, into a baſon that hath ſome fair Water therein, and when it is cold, take away the foot, not ſuffering any of the curds or whey to remain in the bottome: and if you regard not the charge thereof, you may either the firſt or ſecond time, diſſolve your butter in Roſe water as before, working them well together, and clarifie it, and this butter ſo clarified, will be as ſweet in taſte, as the marrow of any beaſt, by reaſon of the great impurity that is removed in this manner of handling: for I think that if you clarifie it throughly well, you ſhall find either a fourth or a fifth part of droſs, in the beſt butter that you can buy in the market, which I think to be more fit for the dung hill, then for a mans ſtomack, onely it helps the butter wives to make ſome weight: as though ſimple wenches they knew not which way to help themſelves in their ſmall diſhes. *Qre.* What

butter

butter the cream of Goats milk will make, becauſe the milk is exceeding ſweet and nouriſhing. You may eaſily know what countrey man I am, by following this London text ſo far as I do: nevertheleſſe, let me teach one thing more to them that know it not already, and ſo I will conclude with butter. That in the winter time it is very requiſit to ſcald your milk preſently as it comes from the Cow, before you put it into your pans, but take heed it ſeeth not, and you ſhall have very good butter, curds and cheeſe, when others ſhall want the ſame. And thus I hope, I have given ſome content to thoſe Gentlewomen, which do not think themſelves too old, or too wiſe to learn; and if there be any that can ſay more in the circumſtances of Butter, I hope there Dairies be greater then mine, that never kept but two kine in any one Summer.

110. *To make any cheeſe taſte of the aforeſaid Oyls.*

AS before in butter, ſo likewiſe if you mingle any of the aforeſaid Oils in your curds, before you preſs out the whey, you ſhall feel the ſame very ſenſibly and pleaſantly, in the taſt of your cheeſe; in the which you may eaſily mingle ſome roſe leavs, or give them the taſt, ſmel, and color of any flower, at your pleaſure. There is alſo a trick in the making of a cheeſe, without putting the ſame into any preſs, onely by giving the ſame a gentle peize, whereby the whey that runs from the curds wil be as thin as water, and carry no ſubſtance with it, and ſo your cheeſe will be much bigger and better then otherwiſe it would be, being made after the common countrey faſhion. I have been as bold as I dare, in diſcovery

hereof, becauſe I would be loath to offend a Gentlewoman that preſumes of a great ſecret herein, and ſhe is the more dainty of her skill, becauſe ſhe hath found it out by many labours, and loſſes of her own. But I think I have given a ſufficient light to a good Dairy Woman, to find out all the circumſtances thereof in time.

111. *Wholſome and comfortable* Manus Chriſti, *for ſuch as have weak ſtomacks.*

DIſſolve ſome of the whiteſt Barbary ſugar you can get, with a little roſe-water in a ſmall ſhallow pipkin that contains 3 or 4 ounces, and glaſed within, and having a ſmall lip, boil the ſame upon a ſoft fire, unto a ſtiffneſs, or conſiſtency (as they term it) till a drop thereof being poured out of the lip upon a cold ſtone, become hard, and not clammy when it is cold. And when you have your ſugar boiled to this heighth, then having a clean marble ſtone, firſt ſprinkled over with fine flower, pour the ſame out by peecemeal, making each of them of the bigneſs of a groat or teſter, or thereabouts: and when they are thorow cold, having a few drops of the oyl of Cynamon, Cloves Mace, Nutmegs, &c. in a ſilver ſpoon, with a ſmall feather give each of the *Manus Chriſti* a touch onely with a little oyl on the tip of the feather, and ſo you may prepare a great many together of them with ſuch oyls as the Phyſitian ſhal give direction, and in the eating of them you ſhal find them to warm and comfort your ſtomack exceedingly. Some put in their oyles in the boyling of the ſirrop; but I hold the firſt to be the better way, both becauſe you may make of ſeveral ſorts at once; as alſo for that

theſe oyls being over heated, do loſe a great part of their grace in taſt.

112. *Divers kinds of excellent bottle Ale to be made with the aforeſaid Oyls.*

I Cannot remember that ever I did drink the like ſage Ale at any time, as that which is made by mingling 2 or 3 drops of good oyl of ſage, with a quart of Ale, the ſame being well brewed out of one pot into another. And this way a whole ſtand of ſage Ale is ſpeedily made. The like is to be done with the oyl of Mace or Nutmegs. But if you wil make a right Goſſips cup, that ſhall far exceed all the Ale that ever mother *Bunch* made in her life time, then in the botling up of your beſt Ale, run half a pint of white Ypocras that is newly made after the beſt receit, and with good ſpice, with a pottle of ale; ſtop your bottle cloſe, and drink when it is ſtale. I fear ſome Ale wives, if they had known this receit, privately to themſelves, would have hung out holli-buſhes at their red lettiſes, and ſo they might have been miſtaken for Taverns, of many Ale Knights. Some commend the hanging of a roaſted Orenge prickt full of Cloves, in the veſſel of ale, till you find the taſt thereof ſufficiently mended to your own liking.

113. *Wormwood wine made very ſpeedily and in great quantity.*

TAke ſmal Rochel, or Conniack wine, put a few drops of the extracted oil of wormwood therein, brew it (as before is ſet down in the bottle ale) out of

of one pot into another, and you ſhall have a more neat and wholſom wine for your body, then that wine which is ſold at the Stilyard for right Wormwood wine. And as for their Rheniſh wine, I have heard them ſpeak it, whom I dare beleeve, that how many fatts ſoever be found at once in ſome of their cellars, there is none worth the taſting, but that onely which is abroach, and this is a pretty ſlight to deceive the Purveyor. It may be the reſt of the fats, have not yet received either the brimſtone match, or the compound ſcent which they pour in with it, or the hearb *Gallitricum*, which I have heard greatly commended that way; but howſoever they ſophiſticate this wine, I am verily perſwaded, by that little acquaintance which I have had with the grapy God, that for the moſt part, theſe Dutch Brewers, buy no other wines but *Rochel* or *Coniack*, after 14 or 16 pounds the tun, and with ſome five or ſix ſhillings charge upon a fat, they draw it again for Rheniſh wine, after 32 *l.* the tun. I will not touch here the ſetling of new Perry inſtead of Rheniſh wine in the muſt, or both together in equall proportion, becauſe I fear I have already vexed the Vintners, who find more profit in their ſecret mixtures, then pleaſure in theſe open diſcoveries.

114. *How to ſweeten the Oyl of Almonds with the aforeſaid Oils, ſo as the ſame may ſerve the Perfumer inſtead of the Oil of Benn, which is made of the Italian nuts.*

CHuſe the neweſt and ſweeteſt Almonds, that you can get (you ſhal know them by their reddiſh colours, and I hold the Barbary Almond, far better

better then the Jordan Almond for this purpoſe) expreſs their oil according to the manner hereafter ſet down, without warming either the Almonds or the braſen box wherein you put them, leſt they become rank in a ſhort time. After you have drawn ſome quantity hereof, let it ſettle four or five days, till all the *Fæces* or grounds fall to the bottome; then by declination pour away the cleareſt, & take a little thereof, and mingle a few drops of the oil of cloves therewith, ſtirring them well together in an apt glaſs, then pour more of the oyl of almonds thereto, working as before, incorporating ſo much of the oyl of cloves therewith, till the ſcent thereof like you. With this oyl thus prepared, the perfumer may temper his muſk, civet, or amber-greece, as he doth with his oyl of Benn, which ſerves for no other purpoſe, but onely to convey ſuch ſcents & perfumes into the leather as he hath wrought together for the ſelf ſame purpoſe, being it ſelf of no ſcent at all. This I write, not upon bare imagination, but upon ſome proof which I have ſeen made with the ſimple oyl of Almonds in gloves of no ſmall price. Although I know this oyl to be greatly doubted of by the Perfumers, becauſe in a few moneths it wil grow ſomwhat rank, whereas the fault is in the old Almonds which the Apothecaries do chiefly uſe, becauſe they are more oyly then thoſe which are new and freſh.

And here if a man were diſpoſed (*Seria miſcere jocis*) were a fit opportunity to diſcourſe of a Philoſophical contrition of oyls, thereby to defend them from putri faction. Alſo if you labour and beat well together ſome freſh oyl of Almonds with change of roſe water, it will ſerve inſtead of ſweet oyntment, or *Pomatum* to anoint your hands with. So likewiſe

of the oyl of Cloves, tempered with the oyl of Almonds to rub a new glove in the inside, to give it a sweet sent in the wearing. Here I could commend the oyl of Beech-mast, if it were in yeeld according to the report of a Neapolitan writer; for that which is expressed from the nut I know to be a most sweet and delicate oyl.

I could here set down an experienced tryal for the alteration of tallow candles, whereby to make them in a manner as sweet in handling, burning, and putting out as the wax candle, yet not altogether so hard; the principal part of which secret consisteth in an artificial composition of some of the aforesaid oyls. But I must reserve the same till another Edition, which I wil hasten according as I find a thankfull acceptance of the first.

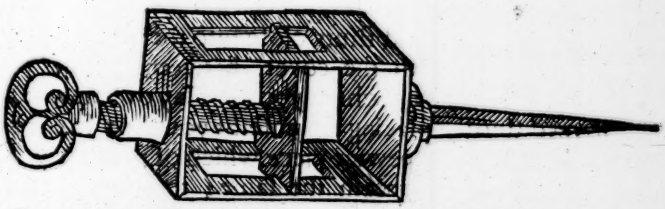
115. *How to draw oyl of Wax, Amber, Iet, Turpentine, &c.*

I Have here advisedly omitted to set down at large the drawing of the oyl of Wax, Amber, Jet, Turpentine, &c. because most of them are offensive in smell. Yet let this in a word or two suffice, that all of them (except the oyl of Turpentine) are to be drawn in sand, and most aptly by way of retort, which some do also use to lute over with lome and flocks well tempered together: and because those unctuous and swelling bodies shall not rise up into the helm, they use to suppresse them by the addition of clean washed sand, powder of glass, tilestones, and such like. And as for the oyl of Turpentine, it wil rise by a gentle Balneo, in a Cucurbite of glasse or stone, having a helm of glass lured thereunto. Qre. If it wil

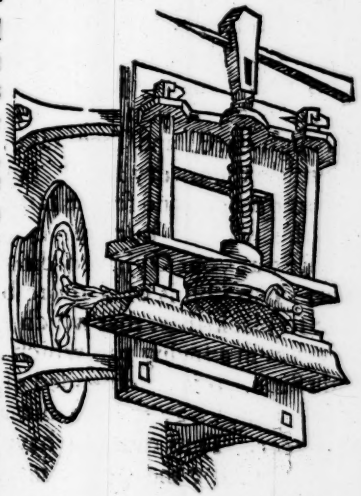
not

not riſe from water out of a braſs pot, according to the manner of the oyls of herbs and ſpices, before ſet down.

116. *Of expreſſed Oyls.*



OF all the aforeſaid ſeeds and ſpices, as there may be an oyl drawn by aſcention, ſo likewiſe there may be an oyl had by expreſſion; yea, many ſimples will yeeld their oyl by expreſſion, which will yeeld none at all by aſcention; but as you ſhall have much more quantity of Oyl this way, either from the Nutmegs, Cloves, Mace, &c. ſo the ſame is much groſſer then the other, and more fit for outward applications then inward medicines; nevertheleſs they carry a ſtrong and full ſcent of the aromaticall body, from whence they are drawn, and



have also their especial uses. The manner whereof is this. Beat your spice or seeds throughly well in a stone mortar, and thrust them close into a peece of haircloth, or French boulter, (which before hand you must place in your mettaline box, that hath a little close iron grate in the bottome) then lap up the haircloth, laying the weight upon it, which presseth down the spice, and shuts close into the box. Then put this box with the cover, between the sides of your iron presse, which you may lay overthwart a joyned stool; placing the nose of your box so, as it may drop into a pewter piece, which of purpose you must place underneath the same; then give a turn now and then with an iron pin to the screw, till you see no more Oyl to issue, (some to gain the more Oyl, infuse the spices in the Oyl of sweet Almonds first.) Note that your seeds and spices, and the box with the other implements, must be warmed before you expresse; and in cold weather it is best working in a warm place, if you mean to have store of Oyl. This way you may purchase a most excellent sweet Oyl of eggs, if you do first roast them till they be through hard, and then take the yolks onely, and crumble them very small, putting them into a little pewter peece, and set the same in a hot Balneo, till all the watrish humour be evaporated, and then presse out your Oyl according to the aforesaid manner. This Oyl is of a more beautifull colour, and not so blackish as that which is made after the grosse manner in a frying pan, which smelleth and tasteth of adustion. It is commended especially in a burn, and for taking away the inflammation and heat of Gunpowder. Thus much I have thought convenient to set down for the perfecting of this branch of the Spagi-

Spagirical Art. And now I will proceed to ſome other neceſſary knowledge in the art of diſtillation, concerning ſuch matters as I am aſſured that every Gentlewoman that delights in chimical practiſes, will be willing to learn.

117. *How to make Cinamon water.*

THe beſt way is firſt in a braſs pot with a pewter Limbeck, to diſtill from 2 or 3 gallons of ſack, or muſcadel, ſo much ſpirit or *Aqua vitæ* as will aſcend, then pour that ſpirit upon as many gallons of fair water, putting to every gallon of water and ſpirit, a pound of choice Cinamon firſt bruiſed; lute the joints of your pot and Limbeck, as before in the extraction of the Aromatical oyls, keeping the bucket in the head of the Limbeck cold, with change of water, and ſo draw as long as you find any reaſonable taſte of the Cinamon. This of all the ordinary ways is the beſt that I know. But if you infuſe your bruiſed Cinamon, in ſpirit of wine onely, or in the ſpirit drawn from ſack lees, or ſtrong ale, untill you have gotten out by imbibition, all the tincture, taſt, and ſtrength of the Cinamon, which will be in ſeven or eight days, and then if you adde a new proportion of fair water, or rather of damask roſe-water unto it, and ſo diſtil in a glaſs body and head in *Balneo*, well luted in the joints, I think you will find this the moſt profitable, and moſt artificial way of all others. And leſt you happen to be deceived in the ſtrength of your cinamon water, you muſt taſt every ſtick of cinamon by it ſelf, before you buy it, yea and the ſame at either end, or elſe you may happen to be deceived. If when you have drawn your

Cynamon water, you like not to have it of a thick or cloudy colour, as commonly it falls out in this manner of diſtillation: ſome hold opinion, that it will become clear, onely by ſunning it in an hot ſunny day or two; and ſome uſe to circulate the ſame in Balneo till it clarifie. But I have found it an infallible way, to have the ſame clear at the firſt drawing, by diſtilling the ſame in a Copper Balneo, with a Lamp onely, or ſo gentle a heat as may not be idle, and yet procure but a ſoft and eaſie diſtillation. And I think this was Doctor *Burcots* way, who thought himſelf very cunning in the diſtilling thereof, becauſe there was not much clear Cinamon water to be had in his days.

118. *How to make the extraction of all Herbs.*

SOme are ſo curious in this work, as that no other water, but the diſtilled water of the herb onely, wil ſatisfie their fancy herein, although I ſee no great difference between the ſame, and an ordinary water firſt diſtilled and divided from his impurities: but let the Chymiſt, now he knoweth them both, take which he liſt, for I do reſt indifferent, ſaving that I find it an infinite matter to diſtil ſo much water as will be requiſite for the gathering of any quantity of this ſubſtance, or tincture as ſome term it. But with whether of them ſoever you begin, you muſt proceed in this manner. After you have macerated great ſtore of the Herb in ſeveral waters, until ſuch time as you find each water deeply died, or tincted with the colour of the Herb; then having a large Balneo, wherein you may place divers bodies of glaſſe at once, you muſt evaporate all the water until in the

end

end you leave nothing elſe but a ſtiff and dry ſubſtance, which our Chymiſts cal the extraction of the Herb. Some chuſe rather to work upon the dry herb then the moiſt, *& alij è contra.* But if you work upon the diſtilled water of the herb, as upon the Roſe, Balm, Bugloſs, *Carduus Benedictus*, or any ſuch other Water of good uſe or account, then it is not amiſs to lute or ſet your heads of glaſs alſo upon the bodies, with receivers, thereby to receive the water that aſcends, ſo as there may be no loſſe of your diſtilled waters, and yet alſo you may attain to that ſecond water which you expect. This extraction I have heard highly commended by many Artiſts, and it may be it hath ſome better uſes in Phyſick then I know or can imagine. But if I ſhall deliver my opinion thereof, I think it to be the fine and ſubtile earth of the herb or flower, out of the which ſome curious Limner may draw ſome excellent colour for his work, if he make choiſe of the flower de Luce, white Roſe, blew Bottle, Marigold, or ſome ſuch other Flower as is of any deep tincture: but I perſwade my ſelf, that no Philoſophical Vulcaniſt, or perfect Paracelſian, will ever find any true magiſtery, tincture, quinteſſence, or *Arcanum* therein.

119. *How to make Salt of Herbs.*

BVrn whole bundles of dried Roſemary, Sage, Hyſop, &c. in a clean oven, and when you have gathered good ſtore of the aſhes of the herb, infuſe warm water upon them, and make a ſtrong & ſharp Lee of thoſe aſhes; then evaporate that Lee, and the reſidence or ſetling which you find in the bottome thereof, is the ſalt you ſeek for. This ſalt, according

to

to the nature of the herb, hath his operation or uſe in Phyſick, and in my conceit doth work greater effects in the ſtomack then any of the aforeſaid extractions. Some uſe to filter this Lee divers times, that their ſalt may be the clearer, and more tranſparent. But becauſe the word *Filter* is a word of Art, and not underſtood by all, let me tell ſo many as know not already, that it ſignifies, The making up of a brown paper in the nature of a funnel, then pour in your Liquor and let it run through at its leiſure.

120. *How to draw and rectifie a Spirit of Wine in diuers manners, as well with fire as without fire.*

IF you would diſpatch any great quantity thereof, you muſt have a large Balneo, which is no more then to place your glaſs body, which holds the matter to be diſtilled, in a convenient veſſel of water, when the water is cold (for fear of breaking) and put a wiſp of ſtraw or Hay in the bottome under it, and make the water boil in a veſſel wherein you may place ſix or eight glaſs bodies at once, with their helms and receivers, each of them faſtned to a leaden triver, that they may ſtand ſteady in the water, wherein you may put ſome Hay if you pleaſe, pour into each of them a reaſonable quantity of the oldeſt and mightieſt Sack, Malmſey, or Muſcadel, becauſe theſe wines are ſtrongeſt, and yeeld moſt ſpirit. Your fire muſt be ſoft and gentle, ſo as you may tell eight or ten between every drop that falls. Draw no longer then till you may perceive long veins in the helms, for if they once grow dewy, or ſtand full of drops, then you may aſſure your ſelf, that all the ſpirit is gone, and the flegmatick part of the wine aſcends: yet

yet there be divers, and thoſe of good judgement, who do moſt conſtantly affirm, that before the veins appear in the helm, the ſubtilleſt ſpirit of all doth ariſe in a dry and inſenſible fume, which condenſating by the coldneſs of the air, doth reſolve into drops in the receiver. Some do uſe at the firſt pint always to change the receiver, and ſo divide that which comes firſt by it ſelf from the reſt, putting all the faint ſpirit together, and then rectifie them ſeverally in the like bodies and helms by a ſecond diſtillation, in the aforeſaid Balneo; and they never leave to reiterate their diſtillations, until by making tryal of a little thereof in a ſpoon, they find the ſame being kindled to burn all away. Some faſten a ſpunge in the mouth of the glaſs body, and ſome cover the mouth of the glaſs with an oiled paper, and ſo perſwade themſelves, that nothing but perfect ſpirit will penetrate either the ſpunge or paper, and ſome put the crum of a white loaf in the bottom of the glaſs, thinking thereby to ſuck and drink up all the faint part of the ſpirit. But I have found by my own experience, that after there is once drawn a pint, or a pint and a half of ſpirit, from a gallon of good wine, if the ſame be put into a large bolt receiver as they term it (which

is a glaſs having a long ſharp ſteal of the bigneſſe of a muſket, or double muſket bore, with a great round hollow ball in the bottom containing ſome pottle, or gallon, or two or three, if you can get them ſo large (for the greater in content the better for this purpoſe) this bolt glaſs muſt be well faſtened to a leaden trivet in Balneo, and then if the ſpirit that is ſo groſſely drawn, be put therein, ſetting a ſmall helm of glaſs

that may fit the ſteal, with a receiver at it, then the pure ſpirit onely will aſcend, and the flegmatick part not being able to mount ſo high, falls down again to the bottome as faſt as it riſeth, and ſo at once rectifying, you ſhal have your ſpirit perfect enough. Others thinking to attain to a quinteſſence, or at leaſt to an oyl of wine, that will fleet and ſwim upon any other wine; they begin with a long circulation of the wine, firſt either in a Pellican, or other large circling glaſs, placing the ſame either in horſ-dung, or in a Balneo, or ſome other ſuch like digeſting heat, by the ſpace either of a moneth, or two or three, every one according to his fancy, and then they fall to their diviſion or diſtillation by a ſoft fire, keeping that by it ſelf which comes firſt, as a moſt rare and excellent Spirit. And all this while, if I be not deceived, we have gotten nothing elſe but the fiery part of the wine, or rather the burning *Aqua vitæ* both of the Wine and Tartar together, that are urged up by fire to knit themſelvs both ſpiritually and inſeparably together. Then let us ſee if any truer diviſion may be made without this Balneo, or any other outward heat what ſoever: nay, let us conſider what may be done in a froſty furnace, where the Northern winds muſt ſtir up nature inſtead of glowing coals. Here I am afraid either my Wit or my Wil wil ſoon be frozen up; nevertheleſs, ſince I am entred ſo far, I wil either break the Ice, or venture a fall; and if I ſlip, you ſhall ſee how I will froſtnail my ſelf the next time that I ride abroad in ſuch hard weather. I dare not here commend that new conceipted way of rowling up and down a large veſſel of wine many hours together, or after the ſame hath wrought upon the ſeas, ſo ſoon as it commeth to ſhore, preſently to clap on a glaſſe helm

helm upon the bung-hole being open, and luting the ſame cloſe to the Cask, to receive that ſpirit which nature in her heat will ſuddenly breath out: and yet I will not altogether condemn the invention, if ſuch a workman have it in hand as is able to bring the ſtomack of wine into a kindly ſweat. But ſuppoſe this to be a right and natural diſtillation, though it be temperately performed, and without any forreign fire, it is not that extream cold and congealed work that was promiſed. But what if I ſhould ſend you into Frizeland, or Ruſſia, or Muſcovia, or into ſome other place near unto the Northern pole, and there wil you after *Paracelſus* his manner, to lay abroad into the open air, either a But of Sack or Muſcadel, til the ſame were congealed into a hard maſſe or lump of Ice, and then piercing the veſſel even to the center, with ſome apt inſtrument of Iron, to pour out that inward life or ſpirit which had retired or withdrawn it ſelf from the outward cold, into the warm fort or caſtle of nature? I am afraid you would rather forſwear the trial, then take ſo long a journey in hand. Then let us ſee what may be done in this kind in our own Countrey, though not in ſo great a quantity. I have found by thoſe few trials which I have made in London, that if in an extream and ſharp weather in the winter time, a glaſſe of wine containing a pint, or half a pint in meaſure, and being well ſtopped with Cork and Brimſtone, or ſome other ſtrong lute, be expoſed to the air on the top of ſome high leads, that the ſame will oftentimes congeal and freeze in one night within the glaſſe, ſo as there will not remain above a moyety, yea many times a third part onely of the wine unfrozen, which you ſhall find ſo deep of hue and colour, and ſo mighty in ſtrength and taſt, as

that the best Gascoign wine that comes from Burdeaux wil seem but Rochel wine in comparison thereof. Here we have an entrance made into nature, and since we have gotten such hold, let us gather in more upon her. Peradventure if the glasses were as thin as any vial, smal in content, round, and of an orbicular form, rising up with small long necks, and the same were placed Northerly either in snow, or water, or rather in water wherein some store of Salt-peter hath been first dissolved, to make the water more inwardly cold; or peradventure if before the stopping of your glass you did dissolve some reasonable proportion of snow water into your wine, that either some one of these helps, or all together might work a perfect congelation of the faint and flegmatick part of the wine, and so you might attain to your desire. But without all peradventure, there may be (by some means that are known but to a few) such an outward continued cold maintained round about the glasse, as that in any reasonable cold weather the spirit may be forced to fly inwardly for succour into his own bosome, and being once driven into this streight, I account him but a simple Chymist that cannot fetch him out, and divide him from the rest of his grosse body. Prove the freezing of Ale or Beer, or of the smallest kind of wine, for they are likeliest to freeze, because they contain but smal store of spirit in them. Although I have seen even Sack it self gather a thin icie crust in one nights freezing.

121. *To make Claret Wine to mount up in a red Cloude in a Glasse of Conduit Water.*

Cause

CAuſe a glaſs to be made of the faſhion of thoſe which are commonly uſed in hour glaſſes, but of ſome greater content, and with a leſſe lip, fill the ſame full of fair water, and whelm it upon the mouth (which becauſe it is ſmall, and wants air, no drop will iſſue thereat) then put it into a Beer glaſs of the form here deſcribed, being almoſt full of Claret Wine; and if you hold the ſame wiſely, and that the Glaſſes fit one another, you ſhall ſee the Claret wine aſcend in the form of a Cloud, and that which remaineth in the neather Glaſs to be exceeding faint both in taſte and colour. If either the tincture alone, or the ſpirit of Wine did here aſcend, & ſo incorporate it ſelf with the water, I would hold it for a rare ſecret, and a light into ſome further matter; but I fear you will find nothing elſe therein, but that when two bodies touch each other, that the wine being the lighter ſeeks the upper place. And yet I muſt needs commend the invention of that honeſt and learned Gentleman from whom I had it, and no doubt before the diſcovery thereof, it would have been thought an admirable conceit, to have made two ſeveral glaſſes to have exchanged their liquors, without any other means.

123. *To extract the Spirit of any vegetable, or Herb.*

FIrſt dry your Herb, then put it into Balneo, and let it infuſe eight hours, or one whole night; Then take the liquor and the ſubſtance that was infuſed in

Balneo, and distil it in *Alembico*, and when you perceive a gum to remain, and hath a full tincture of the herb, take the top of that gum, and infuse it in the liquor you have distilled in Balneo, then filter it through a paper, then distil it again in Balneo, and you shall have the true spirit of the herb or vegetable. This was delivered me by the son and heir of a Nobleman, who received it of one of the greatest practisers of my time; and if it answer the title, I am glad that it was my good hap to light upon it.

124. *How to give a pretty grace both in taste and property to the spirit of wine.*

IF you infuse the same upon the rind of a civil sour Orenge or Limon, you shall find a pleasant and comfortable taste thereby: or if you would not have the same descried by his colour, you may redistil the spirit so tincted in Balneo. Some give a touch unto the spirit of wine with Rosemary, some with Anni-seeds, some with sweet Fennel-seeds, some with one seed or herb, and some with another, by infusing the same a day or two upon them.

125. *How to draw the Spirit of Honey.*

AFter you have dissolved sufficient store of hony in fair water, to make a good Metheglin, and that the same hath wrought a reasonable time, by the addition of yeast, according to the manner of Beer and Ale; then when the same is grown unto a strong and mighty drink by lying, you may draw a spirit from it by distillation, as you do either from Wine, Ale, or Beer.

126. *How*

126. *How to diſtil Roſe-water, both good cheap, and at Michaelmaſſe, and to have as good yeeld as at any other time of the year.*

IN the pulling of your Roſes, firſt divide al the blaſted leaves, then take the other freſh leaves, and lay them all abroad upon your Table or Windows, with ſome clean linnen under them. Let them lie three or four hours, or half a day; but if they be gathered in dew, then lay them abroad as before, till all the dew be vaniſhed and gone from them: put theſe Roſe-leaves into great ſtone pots that be leaded within, and well dryed, (ſuch as the Gold-ſiners call their Hookers, and ſerve to receive their *Aquafortis*, be the beſt of all others that I know.) and when they are well filled, ſtop their mouths with good corks all covered over with melted Brimſtone, and then ſet your pots in ſome cool place, and they will keep a long time good, and you may diſtil them at your beſt leiſure. This way you may diſtil Roſe-water good cheap, if buying ſtore of Roſes when you find a glut of them in the market, whereby they are ſold for ſeven pence or eight pence the buſhel, you put them up as before. And ſome hold opinion, that if in the midſt of theſe leaves you put ſome leaven, and after fill up the pot with Roſe-leaves to the top, that ſo you ſhall have a Roſe-vinegar from the Roſe in your diſtillation, without the addition of any vinegar at all. You may alſo keep them in glaſſes, and I have known them kept in little rundlets, that have been firſt well ſeaſoned with ſome hot liquor and Roſe-leaves boiled together, and the ſame pitched all over on the outſide, ſo as no air might penetrate the veſſel. *Qre.* If

any

any ſpirit will aſcend, if you make ſeparation of that which riſeth from the Roſe-leaves kept as before.

Some for the more expedition in Roſe-water, do firſt expreſs their juyce, and then diſtil it; and afterward they do alſo diſtil the expreſſed leaves, and ſo they diſpatch more with one Still then others do with three or four. I have ſeen very good Roſe-water drawn this way, but yet I take the ordinary way to be more kindly, eſpecially if the head of your ſtill be made like a Limbeck, with a large bucket to hold ſtore of cold water. And ſome commend the diſtillation of the Roſe, Violet, Couſlip, &c. that is performed by the deicenſory, having alſo a cooler of cold water about it, which at a certain cock you may empty as it heats from time to time, and fill with freſh water again.

127. *How to dry roſe-leaves, or any other ſingle flowers in ſuch ſhape as they grow, without any wrincles, ſo as a buſhel of moiſt leaves ſhall become a buſhel in meaſure when they be dry; and how to keep Roſe cakes and and Roſe-leaves all the year without worms.*

IF you would perform the ſame in roſe-leaves, you muſt in Roſe time make choice of ſuch Roſes as are neither in the bud, nor full blown, (for theſe have the ſmootheſt leaves of all other,) which you muſt eſpecially cull and chuſe from the reſt. Then take of right Callis ſand, and waſh the ſame in ſome change of waters, and dry it throughly well either in an oven, or in the ſun; and having ſhallow, ſquare, or long boxes, of four, or five, or ſix inches deep, make firſt an even lay of ſaud in the bottome, upon the which lay your roſe-leaves one by one (ſo as no one of

of them touch another) till you have covered all the ſand: then with a ſpoon, or with your hand, ſtrew ſand upon theſe leaves till you have thinly covered them all, and then make another lay of roſe leaves upon the ſand, and ſo make *ſtratum ſuper ſtratum* for four or five lays one upon another. Set this box abroad in ſome warm place in a hot ſunny day (and commonly in two hot days they will be throughly dry) then with your hand or a ſpoon, you muſt ſtrive gently to get underneath them, and ſo to lift them up without breaking. Keep theſe leaves in jar glaſſes bound about with paper, or parchment, in ſome cupboard that is near a chimney, or ſtove, leſt otherwiſe by the damp of the air they relent again, and ſo you loſe your labour. I find the red roſe-leaf beſt for this purpoſe, by reaſon of his deep colour. You may alſo dry Paunſies, Stock-gilliflowers, and other ſingle flowers, ſuch as will hold their colour beſt, in this manner, by taking away the ſtalks, and pricking them one by one into the ſand, and ſo preſſing their leaves ſmooth with the other ſand, which you muſt lay upon them. And ſo you may have roſe-leaves and other flowers to lay about your baſons, windows, and court cupboards all the winter long. Alſo this skil is very requiſite for a good ſimplifier, becauſe he may dry the leaf of any hearb, in this manner, and lay it being dry in his herball, with the ſimple which it repreſenteth, whereby he may eaſily learn to know the names of all ſimples which he deſireth. The ordinary drying of Roſe-leaves, is to lay them upon hot leads, in a hot ſunny day, and the ſooner you diſpatch, the better they will keep their colour, and ſcent. And when you have dried them throughly, you may fill a Roſe-water glaſſe there-

with, ſtopping it cloſe, and ſo they will laſt good a long time.

The powder of Roſe-leaves, and ſo alſo of all other hearbs and flowers, may be kept from all outward accidents for one years ſpace, if there be any reaſonable care uſed therein.

If you would keep your Roſe-cakes without worms, you muſt now and then, when you have drawn your bread out of the oven, ſet them in, in ſieves, or upon papers, and ſo of your roſe-leaves; and if you hang them up in paper bags, near ſome chimney where fire is ſometimes made, you ſhall be ſure to keep them ſweet and good, for any uſe for which they will ſerve, although I know divers that keep their roſe-leaves onely according to the manner before ſet down.

128. *Roſe-water, and Roſe-vinegar, of the colour of the Roſe, and ſo of the Cowſlip, and Violet-vinegar.*

SOme infuſe roſe-water upon moiſt red roſe-leaves, and ſo ſet it abroad on ſunning for a few days, but this colour cannot laſt long, but if you would make your roſe-water, and roſe-vinegar of a perfect ruby colour, then make choiſe of the crimſon velvet coloured leaves, clipping away the whites with a pair of ſheers, and being through dry put a good large handfull of them into a pint of damask, or red roſe-water, ſtop your glaſs well, and ſet it in the ſun till you ſee that the leaves have loſt their colour; or for more expedition you may perform this work in balneo in a few hours, and when you take out the old leaves put in freſh, till you find the colour to pleaſe you; keep this roſe-water in glaſſes very

very wel ſtopt,and the fuller the better. What I have ſaid of roſe-water the ſame may be intended of roſe-vinegar,violet,marigold,and cowſlip vinegar,but the whiter the vinegar you chuſe for this purpoſe, you ſhal have it the better colored,& therfore the diſtilled vinegar is the beſt of all other, ſo as the ſame be warily diſtil'd with a true diviſion of the parts made according as hereafter is ſet down,but ſome do highly commend ſuch vinegar as is made of elder flowers,choicely pickt,and wel dryed before imbibition.

129. *How to diſtil wine vinegar,or good Aliger,that it may be both clear,and ſharp for ſauce,or other uſes.*

I Know it is a uſual manner among the novices of our time,to put a quart or two of good vinegar, into an ordinary leaden ſtil',and ſo diſtil it as they do all other waters. But this way I do utterly diſlike, both for that here is no ſeparation made at all,& alſo becauſe I fear the vinegar doth carry an ill touch with it either from the leaden bottome, or pewter head,or both. And therefore I could wiſh rather the ſame were diſtilled in a large body of glaſs, with a head or receiver, the ſame being placed in ſand or aſhes. And note,that the beſt part of the vinegar is the middle part that ariſeth,for the firſt is faint and flegmatick,and the laſt will taſt of aduſtion, becauſe it grows heavy towards the latter end,and muſt be urged up with a good fire,and therefore you muſt now and then taſt of that which comes both in the beginning, and towards the latter end, that you may reſerve the beſt by it ſelf. Here I could alſo adviſe,or wiſh all Ladies and Gentlewomen, to have all their vinegar ſerved in at their tables in lawcers of glaſſe,

or Purſlain, becauſe if it be ſtrong, and continue long in a pewter ſawcer, it hath an intention towards ceruſe, which I could never hear commended, either for wholſome meat, or ſawce for a mans ſtomack. But it may be this is but one Doctors opinion, and that of ſuch a one as never deſerved his degree in ſchools, and therefore I will leave the ſame at large until ſome better Clark do hereafter confirm this green conceit. Here I cannot omit the profitable obſervation of one of our London Chimiſts, who after he had drawn good ſpirit of wine from muskadel, did by ſunning of the ſame alſo make good vinegar, of the fæcical part thereof.

130. *How to keep the juyce of Orenges and Limons all the year, for ſawce, Iuleps, and other purpoſes.*

I Know no reaſon why the juyce of the Limon, or Orenge ſhould not keep as well in ſmall wooden veſſels, as either verjuyce, Cider or Perry, and it may be the want of trial hath only proceeded of the charg that would ariſe in filling of a ſmal veſſel only with ſuch liquor. But how then have we forgotten to provide our ſtore in glaſſes, which we may fill with a ſmall charge, when Orenges are to be had for 12 d. or 16 pence the hundred? Let us then expreſs their juyce, and paſs it through an Ypocras bag, to the end it may be the better clarified from all his impurities: with this juyce fill up a roſe-water glaſſe (of what content you pleaſe) within an inch of ful, cover the ſame with a looſe cap of leather, till it have done his boiling, which I have ſeen continue many days together, and when it becomes ſtill and quiet in the top, then fill up your glaſſe with good Sallet Oyle,

and

and then ſet it in a cool cloſet, or buttery, wherein no ſun commeth, But the apteſt glaſſes which I can imagine for this purpoſe, were ſtraight upright ones, like to our long beer glaſſes, which I would have to be made of purpoſe at the Glaſſe-houſe, with ſmall ronnd holes within two inches of the bottome, in which holes I would place fit faucets to draw the juyce thereat, as I ſhould have cauſe to ſpend it; and ſo the grounds or lees would ſettle to the bottome, and the Oyl would ſink down with the juyce ſo cloſely, as that no air could enter to begin any putrifaction therein; or inſtead of holes, if there were glaſs-pipes, it were the better, and the readier way, becauſe you ſhall hardly faſten a faucet well in the hole. You may alſo in this manner preſerve many juyces of herbs, that carry ſome ſtore of heat & fire in them, by covering them a reaſonable thicknes with ſallet oil. But there is a better way then this by many degrees (although this be ſufficient for any ordinary uſe) for the long and true preſervation of all juyces, and liquors whatſoever, that have had no digeſtion, or decoction already, wherein neither oil, nor any outward help is required, but onely a true, and Philoſophical rotation, whereby the inward fire of nature may be ſtirred up in every vegetable, to defend it ſelf ſufficiently againſt all putrifying whatſoever. And ſo I have kept both the juice of cowſlips, which (if I be not deceived) will not laſt long by any ordinary courſe of preſerving, and the juyce of Orenges ſimply of themſelves without any addition, as ſound and perfect at the years end, as they were the firſt day, or rather (to ſpeak truly) ſomewhat exalted in kind. But becauſe ſuch ſecrets are fitter for a Philoſophers laboratory, then a gentlewomans cloſet, I wil

not here offer that disgrace unto nature, to discover any magistery upon so base an occasion. And as concerning the keeping of Orenges and Limons in the same state, bigness, color, & tast, as they are brought us out of Spain, or Portugal, it may be that in my next labours I will write at large thereof, and in plain terms, according to those undoubted and approved trials, which I have often made in mine own house for many years together.

131. *How to purifie and give an excellent smell and tast unto Sallet Oyl.*

I Have laboured the more to attain unto this secret, because I know that Oyl is a most excellent and wholesome food, and yet my stomack hath alwaies abhorred the same, till of late, that I found the means to take away the fulsom taste thereof. But first of all let us see what Mr. *Bartholomæus Scappius*, the Master Cook of Pope *Pius Quintus*, his privy Kitchin, hath written in this behalf. He willeth to heat the Oil in a clean pipkin, and when it is through hot, to put therein a piece of bread or dough, suffering the same to remain in the oil, by the space of one fifth part of an hour: And this bread or dough will draw unto it self all the musty and bad tast or scent of the Oil, and so the Oyl will remain pure and clean. And in another place he willeth, to take such Oyl as is not rank, or over strong in scent (and if the same Oyl be made of chosen Olives, it is by so much the better then the common sort) and to put the same in a vessel of Earth or Copper, that hath a little hole in the bottome thereof, which you may stop with wax to open at pleasure. In this vessel for every quart of Oyl,

Oyl, add four quarts of fair water, and with a woodden ſpattle or ſpoon, beat them well together for a quarter of an hours ſpace, and when you have ſo done, open the whole in the bottome, and let out the water; for the Oyl doth naturally fleet above, as being the lighter body: and as ſoon as the water is paſſed away, ſtop the hole, and put in other cold water, and begin a new agitation as before, and work in the like manner divers times as you did at the firſt, till in the end the oyl be wel cleanſed and clarified. In the ſame manner you may alſo purifie all other ſorts of Oyl, as alſo Capons greaſe being firſt melted, but then it ſhould ſeem you muſt uſe warm water inſtead of cold. Al this is borrowed of the Popes cook. *Qre.* If the Oyl had been beaten the laſt time in roſe-water wherein cloves or nutmegs had been infuſed before. And for the ſpeedier clarifying thereof (after your aforeſaid agitations are paſt) you may ſet your Oyl either in a ſtove, or in the ſun till it becom clear. A Grocer of good skill did aſſure me, that by ſetting of ſalet Oyl in the ſun in the ſummer time, he had ſeen the ſame to ſettle great ſtore of foul and groſs lees, from the which by declination he poured out the clear oyl, and kept it till the next winter, and after the ſame had been congealed with ſome froſty weather, he found it the moſt ſweet and delectable oyl that ever he taſted in his life. But an oil-man of ſome experience told me that if ſome bruiſed Nutmegs were hung in a courſe bag in the midſt of the oyl, that in time the ſame would overcõ any bad & lothſom taſte that by ſome accident had infected the Oyl, and give it alſo a pleaſant ſcent withal; or if you ſet a jar in Balneo, full of waſhed oil as before, with ſome ſtore of bruiſed cloves, and rinds of civil O-

renges

renges or Limons, and ſo continue your fire, for two or three hours, and then letting the cloves and rinds remain in oil, til both the taſt & ſcent do pleaſe you; I think that many men which at this day do loath oil (as I my ſelf did within theſe few months) will be drawn to a ſufficient liking thereof. I do know a means how to make a dejection of the lee or fæces of the beſt ſallet oil, that comes over, whereby the ſame will become moſt pure and clear; but I fear that *Saturn* would frown upon me if (without his leave) I ſhould ſo boldly intermeddle with his charge.

132. *How to diſſolve both Coral and Pearl.*

INfuſe the juyce of Limons that is clear, and hath ſetled his reſidence upon the powder of pearl, & it will diſſolve the ſame, by the experience of a learned Phiſitian who hath made proof thereof, and given the ſame with very good ſucceſſe in hot burning Feavers. The ſpirit of Vitriol alſo, which riſes preſently after the flegm, and before the oyl, will diſſolve both Coral and Pearl, if you ſet your glaſſe in warm ſand or aſhes. *Qre.* Whether the ſame may be ſafely taken inwardly, being thus diſſolved, or rather fretted in ſunder; and without any further ablution: but if you take two ounces of whole ſeed Pearl, and infuſe thereon a quart of diſtilled vinegar in a parting glaſs, or in any other ſtrong glaſs of an apt form, you ſhall in ſeven or eight days, diſſolve them into a ſoft or ſlimie ſubſtance, which you may after cleanſe by ablution, if you think good. And this is done without any fire or outward heat; during which work,

work, you ſhall ſee the pearl riſing and falling in the glaſſe in the manner of a continual hail.

133. *How to clarifie without any diſtillation, as well the white wine, as the Claret wine vinegar, wherewith you may make either gallies or other ſauces.*

CHuſe of the ſtrongeſt wine vinegar that you can get, and to every ſix pints, put the whites of two new laid eggs, beat them well together with a wooden ſpoon, untill the whites be turned into a froth or foam, then put the ſame into a new leaded or glazed pipkin, and cauſe the ſame to boil a little over a fire of coals, but not a flaming fire. Then let the ſame run through a courſe white kerſey gelly bag, as they uſe to do gelly: and when it hath run through the ſame twice or thrice at the moſt, it will be very clear, and ſerve for the aforeſaid purpoſes, and it will keep good one whole year. And in the ſame manner, you may fine or clarifie any matter whatſoever. But that which you ſhall gain in the clearneſs, you ſhal loſe in the ſtrength of your wine.

134. *How to make any decoction whether it be of diet drink or other, in the ſummer-time, to laſt longer then otherwiſe it would without any help.*

I Know this ſecret will be very profitable to all the Apothecaries, who in ſummer time ſuſtain great loſſe by the ſowring, and putrifying of their decoctions, whereof ſome be alſo very chargeable unto them, and yet I fear, though I know the concluſion to be true, eaſie, and not chargeable, that it will ſcarcely ſatisfie ſom of them, which are of a curious humor,

becauſe it is ſo plain and ſleight, and therefore derogatory to their great skils that they ſhould ſo long time be ignorant in ſo ſimple a concluſion. Nevertheleſſe becauſe I know that divers others (if they ſhould diſlike) wil make uſe thereof, I think the ſame very neceſſary to be publiſhed. One day, or two, before you fear the decay of your decoction, ſet the ſame on the fire, and give it a walm or two, and ſo now and then reboil the ſame a little; and if you doubt the ſame will become either too thick or too ſtrong by many new decoctions, you may alwaies add ſo much liquor thereunto, made according to the firſt receit, as you think will waſt away at every boiling, and then keep the ſame cloſe, and in a cool place. This may be alſo performed in another manner without fire, or any other addition, and to laſt as many moneths, as it will days the other way. But here I muſt keep *decoram*, and ſute groſſe matters, with groſſe concluſions. It may ſuffice that I have ſet down any way for that, which no way was made common before.

135. *How to draw the true ſpirit of roſes, and ſo of all other herbs and flowers whatſoever.*

MAcerate the roſe either in water, or in his own juyce, adding thereunto (being temperately warm) a convenient proportion either of yeſt or ferment, leave them ſo a few days in fermentation, till they have gotten a ſtrong and heady ſmel, and beginning to incline towards vinegar. Then diſtill them in Balneo, in glaſs bodies lured to their helms, and draw ſo long as you find any ſent of the roſe to come; then rediſtill, or rectifie the ſame ſo often till you have purchaſed

purchaſed a perfect ſpirit. Alſo if you ferment the juyce of Roſes onely, without any leaves mixed therin, you may draw an excellent ſpirit from the ſame; or if you keep the juyce of damask roſes onely in cloſe veſſels wel ſeaſoned with the roſe, it wil yeeld a delicate ſpirit, after it hath wrought it ſelf to a ſufficient head, by the inward rotation or circulation of nature: but this work asks a longer time before you can proceed to diſtillation. The laſt way, and beſt way of all other that I know, is, by an outward fire to ſtir up the moiſt and inward fire of nature, till the ſame be grown to the ſubtilneſſe of a roſe wine; and when you have once brought it to a wine, then every Apothecary, and ordinary practicioner in this art will eaſily divide his ſpirit from him; but they all will ſtagger in the firſt digeſtion; and though they ſhould either reel or fall, I may not lend them my helping hand, otherwiſe then I have done already, unleſs I were aſſured that they were of the number of *Hermes* ſons, and not begotten by ſome baſe Alchymiſt.

136. *How to draw the true and ſimple Oyl of Roſes.*

DRy 20 or 40 buſhels of damask roſes according to Art, put them with a ſufficient proportion of water (ſome commend roſe-water, others rather the juyce of roſes) into a large Copper body, whoſe head muſt have a cooler of large content; lute the joynts well, and after a little maceration give a proportional heat unto the body, and with the water the oyl will alſo aſcend, and fall into the receiver. Prove the ſame manner alſo with the moiſt leaf, and if you ſee any apparent difference either in colour or

thickneſs between the oyl and the water, then you know how to divide the ſame eaſily; but if you can no way diſcern the oyl, then pour that which you have in your receiver, in a bolt glaſſe, having a long ſteal, or into ſome other glaſſe that riſeth up in a ſpiring manner, leſſe and leſſe toward the top: but fill the glaſſe full, and ſo peradventure you ſhall find the oyl, after a little repoſe, fleeting upon the top like cream, which you muſt ſeparate with a feather, and keep by it ſelf. This is either a certain, or a very probable way of proceeding. But if I could ſell the ſecret but for ten years purchaſe, I would paſs it with a general warrantize againſt all objections: In the mean time, let it ſuffice thee, that I have in this little exceeded my commiſſion.

137. *Ypocras made ſpeedily.*

TAke of Cinamon half an ounce, white Ginger 3 drems, Cloves & Nutmegs of each half a dram, of the greins of Paradiſe two ſcruples, of Pepper one ſcruple; let them be beaten ſomewhat groſſely, and then macerated in half a pound of ſpirit of Wine, ſtopping the veſſel cloſe with flowre and water. Let all theſe ingredients remain ſix days in infuſion, in a cold Wine cellar, ſtirring them twice a day at the leaſt. a few drops of this compoſition wil tranſmute a bowl of Wine into Ypocras. This receit may beſeem the Doctor that firſt deviſed it; yet by his favour, I think it requiſite, after you have made the Wine thus Aromatical, that you alſo adde a due proportion of ſugar, without the which in theſe days there is nothing accounted either dainty or delicate, and then you muſt alſo paſs the ſame through

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an Ypocras bag, till it be fine. I think you may alſo perform the ſame with ſpirit of beer, ale, or wine lees much cheaper.

138. *A touch at* Borax Chriſtalinus.

THere is a certain proportion of Borax to be mixed with the *Regulus* of Antimony, which muſt be chymically calcined together, or burnt in a cruſible, or ſuch thing that may endure the fire, until the Borax have glutted himſelf with the ſpirits of Antimony. And this is thought to be a ſafer vomit then either the crude or calcined Antimony, or the *vitrum Antimonij*, that is brought to the colour of the Jacinth, becauſe in all theſe preparations, the body it ſelf of Antimony is retained; but in this preparation you take hold of the ſpirits onely. This may ſafely be given in powder, in the pap of an apple, to the quantity of ten, twelve, or fourteen grains: or elſe the ſame may be finely ground upon a Marble, and then imbibed with the ſmall proportion of wine, which being dreined from the powder, muſt be taken faſting in the morning, according to the order of other vomits. I cannot here omit that, which I will neither warrant, nor condemn, (although I know to which ſide I would rather encline before tryal) that infinite extention of the glaſſe of Antimony, upon which there may be ſo many ſeveral infuſions, and all of them of ſufficient efficacy to give a vomit; as that by ſome men of note, and good reputation, it hath been ſuppoſed to be a neceſſary part or member of the Philoſophers ſtone.

139. *How to make Camphire remain liquid in the form of an Oyl.*

FIrſt heat a braſs mortar, then beat the Camphire as thin as you can, put thereto by little and little at once, one equal proportion of the oyl of almonds, newly drawn, and incorporate them well together, and it will remain in the form of a clear Oyl, without any congelation. I think the ſpirit of Wine will diſſolve the ſame, but when you divide the ſpirit by diſtillation, the Oyl is likely to congeal in the bottome of your glaſs.

140. *An artificial extraction of that ſweet ſirrup of Raiſins, Currans, and Fruites.*

TO every gallon of fair water, put three pound of Maligo raiſins, or raiſins of the ſun, either ſtamped or unſtamped; leave them ſeven or eight days in infuſion, in ſome little half tub, having a faucet in the bottome thereof, at the which you may drein out gently all that ſweet ſirrup which lieth in the bottome, drawing ſo long as you ſee any deep colour in the water: then ſtop the faucet, and put in ſome more fruit, and divide as before: And having purchaſed a ſufficient quantity of this ſweet liquor, boil the ſame away in an ordinary chafer, or kettle, until it grow unto ſome thickneſs, and then for fear of aduſtion, you may finiſh the ſame in Balneo. Expoſe this in divers apt veſſels, and in ſmall quantities to the heat of the ſun, againſt a brick wal upon plates of lead, when the ſun is of ſome reaſonable heighth, as in June, July, or Auguſt. And if you be carefull

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in my direction, you ſhall have a moſt rare and delicate Marmelade (if I may ſo term it) and the ſame alſo candied and hardned in a very ſtiff ſubſtance, moſt naturally taſting of the fruit from whence it is drawn. You may work after the ſame manner, both in figs and currans, which for more cleanlineſſe, I could wiſh alſo to be waſhed in ſome change of waters. *Qre.* What an Artiſt may do in this practiſe, both in Cherries, Grapes, Damſons, Gooſe-berries, Barberries, and generally in all Engliſh and outlandiſh fruits and flowers. But then it is requiſite to dry ſome of thoſe fruits ſufficiently in the ſun, before you make your imbibition, and to roaſt or parch others with ſome further heat, dividing the skins, cores and other refuſe, before you make your extraction.

141. *How to preſerve Damſons, Cherries, Pear-plums, Gooſe berries, &c. in their own juyce or ſirrup, without the addition of roſe-water.*

LAy a convenient number of Plums, Cherries, Gooſeberries, *&c.* in a deep ſallet diſh, or ſilver baſon one by one, cover the ſame cloſe with ſome other diſh, and ſet it upon a chafing diſh of coals, beginning with a gentle heat, until the fruit have gathered a great dew or moiſture unto themſelves; then take of the ſweeteſt Barbary Sugar, and ſtrew the ſame upon the fruit, being firſt brought into a moſt fine powder, (twelve ounces of Sugar is a ſufficient proportion for one pound of fruit, but if you p'eaſe you may allow weight for weight) continue your fire until ſuch time as you ſhall find that the ſirrop hath pierced the ſtone even to the kernel, for then they are boiled ſufficiently; but if the kernel do wrinkle

wrinkle or run together, then they are somewhat over boiled. Also you must not forget to turn them now and then, & to observe all other circumstances as you do use in the ordinary manner of preserving.

142. *The Art of Molding and Casting.*

HAving finished the Art of Distillation, I come now to shew you the Art of Molding and Casting. First you must labour common loam, a little moistned to a stiffnesse, working the same smooth with a roling pin, as they use to do paste, then make thereof a coffin like unto a pie, saving that you shall need no other bottom but the board or table whereon you work, and that you must fashion your coffin according to the pattern which you mean to cast, for sparing of your pap hereafter mentioned. Fasten well this coffin or sides of loam to your table with your fingers, so as the thin part of your pap may not run out at the bottom, then take a branch of rosemary, time, or hysop; *&c.* and at the end of the steal fasten a little lump of loam made taper wise, with the small end thereof towards the stalk, and the greater end fasten likewise to the midst of some part of the sides of your coffin in the inside, so as the same may stick fast overthwart wise, and that no part of your branch either touch your table in the bottome, or reach to the uppermost part of the sides, for which cause you must alwaies make your coffin deeper then your branch or flower which you mean to cast, then make your pap in a wooden dish, or stone pan, presently stirring the composition well together, either with your finger for a shift, or some other apt brush or pencil, that there may be a solution or mixture of the

the liquor or powder together. Then pour the ſame ſpeedily about the ſides of your branch, having care that you do not loſen the ſame from the coffin, and be ſure that you make pap enough to cover all your branch at once, whereat, by often practiſe you ſhall eaſily gueſſe. Let the ſame ſtand a pretty while. s. about the fourth part of an hour, and the whole compoſition will harden into a maſſe or lump, then take away your lome ſides from it, which will ſerve oftentimes, and you have your branches included therein; then with a little ſtick dig out the piece of lome, which you faſtned to the ſtalk of your branch, but ſo as you impair not the mold; then lay your branch abroad for a time in ſome airy or windy place, but not in the ſun, and after neal it in a little earthen furnace, making firſt a foundation of Charcoles, and afterward laying your mold upon them, and then covering your mold with more charcole, and kindling your fire at the uppermoſt coals, and ſo continue your fire by adding of freſh charcoles, till you ſee that the mold be well nealed. s. that it be red hot both within, and without, which you ſhall perceive by a little hole which the lome made at the end of the ſtalk, which they call their gitty, if inclining your body you look therein carefully. Then let the fire go out of it ſelf, and ſuffer the mold to cool; then hath the branch or flower left the impreſſion therof in the mold, into the which when you have caſt your gold or ſilver, you muſt dip your mold in cold water, whereby it will fall in pieces, and you ſhall find your branch of gold and ſilver in al points according to the pattern. All other neceſſary circumſtances for this art doth preſently inſue.

You muſt firſt roaſt or burn the plaiſter of Paris,

Preparation of the plaister

before you mix the same with the rest of the powders, which some men do in this manner. They break the stones in great gobbets, and then laying some coals in a little stone furnace, such as are sold at More-gate, they lay these pieces together upon the coals, and then cover them over with coals, and after kindle the fire at the top, and so let the same burn downwards, and with one fire so made they will be sufficiently burnt; then beat them into powder, and search them as before, but if they break not easily, then they burn them longer. Others think it a better way (though more long and troublesome) to beat the plaister in a great iron Mortar to a fine powder, and then to set the same on the fire in a large strong earthen pot or pipkin, making a good fire under it, and stirring it continually with a woodden spattle, for an hour, or thereabouts, and untill you see the spattle leave as it were a visible line or tract behind it, after you have stirred the powder round about therewith.

Composition of the pap.

Let your powder whereof you make your pap consist of burnt Alabaster, & plaister of Paris, both of them finely powdred and searced, and of the like fine powder of new earthen pots, some use the powder of brick instead thereof. To 3 parts of the powders of Alabaster and plaister first mixed in equal proportion, mingle one part of the powder of earthen pots or brick, but many do cast off in wax, onely in molds consisting in alabaster alone, or plaister alone, or both together without any other composition.

There be some that think one shall cast more sharply if he do likewise grind the aforesaid powders upon a Marble stone after they be searced; but if you searce onely, the searce must be exceeding fine.

fine. *Qre.* If *Gypſum, alumen plumoſum*, or ſpawd be not good to mingle with the reſt of the powders. I have ſeen oftentimes many good patterns of mettal, caſt off very ſharply in ſpawd alone, but you muſt heat the flasks well, before you pour in the mettals, and you muſt ſprinkle the ſpawd with ſome moiſture, wherein there is ſome *Sal Armoniack*, before you do imprint your patterns; ſome do comend the light and downy ſubſtance, finely gathered from the uppermoſt part of the aſhes of old coals.

Making of the pap.

Of the aforeſaid powders you muſt take a reaſonable quantity at once, putting the ſame into a ſtone porrenger, or wooden diſh, and put thereunto ſome clean water, wherein ſome diſſolve an ounce of *Sal Armoniack* to every pottle of water, and preſently ſtir it well together, as before, to make a perfect ſolution and mixture of the matters aforeſaid; this pap muſt not be made too ſtiff, when you caſt branches of herbs or flowers, for then it would preſs the leaves together. Sometimes temper with warm water, and ſometimes with cold, to make the pap dry the faſter, for ſome kind of works.

Preparation of the pap.

If you would attain to a perfection of this pap, you may weigh your powders before you put them into the water, and meaſure the water which you mingle with your powders, and trying ſeveral proportions of water and powder together, you may obſerve which of them proves beſt in the molds, and ever after continue the ſame.

Waters for the pap.

Some do mingle *Aqua vitæ*, ſome urine, and ſome put a ſmal quantity of *Sal Armoniack* to a great proportion of water, and therewith temper their pap.

To ſettle the pap.

As you pour in your pap, knock upon the Table with your fiſt, hard by the coffin, to make the pap

ſettle the better to the bottom, and more cloſe to the pattern.

Molds of two parts,

If you would ſave your patterns, as being of Plaiſter, Wax, Mettal, Alabaſter, &c. then take ſome clay that is well tempered, and not over ſtiff, and make the baſis thereof in diſcretion, according to the thickneſs of your pattern, and hollow or dimple the ſame a little, according as the faſhion of your pattern ſhall require: then preſs your pattern gently into that hollowneſſe, and with your fingers and knife together, work up your baſis with more loam, till by as near a gueſs as you may, the juſt one half of your pattern be even wrought up round about; then ſet up your loam ſides as before in your branches or flowers, and pour in of the pap likewiſe as before, till you have covered all the uppermoſt part of the pattern that lieth bare, with ſome reaſonable thickneſſe: then let it reſt a pretty while, till it be grown to ſome ſtiffneſs, and after take away your ſides, and you ſhal find the one half of your pattern truly imprinted upon the dry pap. Then lay that half upon your table, with the hollow part upwards, wherein the impreſſion remains, and clap on your loam ſides again, leaving your pattern ſtill within the pap, and pour more pap upon the pattern, till you have alſo covered the other part of the pattern with ſome reaſonable thickneſs as before; then let it dry, and take away the ſides, and dip the whole mold a little in water, and you may with your hands very eaſily divide the one ſide from the other. Take out your pattern, and keep it to caſt again withal, as often as you pleaſe. Note here, that you muſt print ſome little gutters or hollows in the loam, whereon your pattern lies after you have fitted it, with the juſt half

of

of your pattern, and this is becauſe the pap which is poured on the ſecond half ſhall fill up the gutters, or hollows, whereby you may, after you have taken out your pattern, know how to ſhut your molds very cloſe together, which otherwiſe you ſhould never be able to do.

How to neal many molds at once.

You may neal many molds together, by laying one by one in a Chimney, with a ſmall diſtance aſunder, but firſt making a good lay of dead charcoal under them, and after cover them all over with charcoals, making ſides about the coals of looſe bricks; and remember to lay the ends of your mold, where the gitties or entrances into them are made, towards you, that as you ſhall ſee cauſe, you may now and then ſtoop and look into the molds, to ſee when they are throughly nealed, that you may ſurceaſe the making of any more fires.

It is alſo very requiſite to have deep pans, very full of ſand, or aſhes that be warm, wherein to ſet your molds, when they are made ready to caſt in, and then to fill up the molds even to the necks or gitties of them, for by that means you ſhall keep your gold or ſilver from paſſing through the molds.

Molding of many branches together.

Mold many branches of Time, Hyſop, Roſemary, &c. at once, that if ſome of them ſhould fail, yet one or other might prove wel; for the charg is not great, neither of your molds, nor yet in the melting of your mettal.

What heat to the molds.

When you mean to caſt any gold or ſilver, you muſt neal the molds red hot again, and caſt preſenty. But if in pewter or lead, a leſſe heat will ſerve; And ſome uſe no heat at all, but caſt the ſaid mettals in the molds being cold.

You muſt make a vent with a ſtraw from the bot-

Vents for the molds. tome of the mold unto the top, whereby the metal (finding air) may run the better, or rather make a double vent from each ſide of the mold, this ſtraw muſt be laid in the coffin, before you pour in the pap, and when the mold is nealed, the ſtraw conſumeth to aſhes, and the vent appeareth; yet I have ſeen many patterns caſt without giving any vent at all.

Cleanſing of the molds. Before you caſt off, clear your molds from the aſhes which are left behind, upon the conſuming or burning out of the branches, flowers, wax patterns, *&c.* in this manner: preſently after the mold is cold enough to hold in your hand, take it by the great end, and put the mouth or gitty which is at the other end, in the palm of your hand, till you perceive no more aſhes to iſſue out of your molds, and after by applying the noſe or pipe of a pair of bellows againſt the gitty, and ſo blowing out the aſhes. Some pour in quick-ſilver at the gitty, moving the ſame up and down a pretty while, and ſo cleanſe their molds.

Wetting of the molds. You may caſt off in wax, in the powders aforeſaid, but then you muſt hold your molds in hot water for a time, and ſo the work may the eaſier be taken out; and in the ſame molds you may caſt off in wax divers times, one after another. Note alſo, that you muſt dip the ſaid molds a pretty while in hot water before you caſt off in wax, and preſently after you have taken the molds out of the water, and before you caſt, you muſt dry them with a ſpunge.

Times to mold in. Some are ſo preciſe in this art, as that they will never mold any fine patterns, but in fair weather, or in ſummer time, and perſwade themſelves that then their

their molds do receive the impreſſion moſt lively, and alſo do dry moſt kindly.

Let your gitty wherein you pour your mettle be wide and large, according to the greatneſſe of your pattern, for that the weight of your mettal being therein, will by the peiz thereof thruſt down the reſt that runneth firſt, into the fartheſt parts, or corners of the molds. Gitty large.

When your molds conſiſt of two parts, before you neal them, you muſt with a knife, hollow, or take away ſome part of the gittee, in the inſide of either part of your mold, making the ſame like a gutter, thereby to convey the mettal the better into the whole mold. Hollowing of the Gitty.

But if you will caſt any imboſſed patterns, of wax, or any other ſlender or curious patterns, that be under cut as they term it. s. ſuch as ſtand antick wiſe, and whereof you may ſee ſome parts behind, which will not ſuffer them to come out of the molds without breaking either the patterns or the molds, then muſt you uſe this deviſe following. Take one pound of common glew, put thereto one ounce of yellow wax, (ſome put two or three ounces) but firſt diſſolve the glew by a gentle fire, with a little water into a thick body, and after this ſolution, put in your Wax, into which Wax ſome do uſe to put a little quantity of the fine powder of charcoal fearced, and ſome mingle the blacking onely that comes of the ſmoak of wax or roſen therwith. Then lay an even piece of loam according to the faſhion of your pattern, but an inch broader then the patern, and in the midſt thereof place your patern firſt oyled, then ſet up the loam ſides of your coffin, and pour your glew thereon, being of a temperate heat Caſting in glue and wax.

and

and when it is throughly cold, take away the sides of lome, and take out your pattern gently. Note also that when you have molded any gentle pattern in glue, you may open the molds by slitting of them, or bowing them backwards thereby the easier to get the pattern without danger of breaking it, and yet the mold will return to his first shape.

Glew serveth often. Note that you may dissolve your molds of glue again, and cast often in them according to the manner before set down.

Whole patterns cast without defacing the pattern or mold. *Qre.* Of hanging patterns by a thread, in the glue aforesaid being first oiled over, untill the glue be cold, and somewhat stiff, and then carefully cutting out the patterns without impairing the molds. Here a good wit may find a great variety of matter whereon to meditate, but I hold it not convenient for the great hinderance to all the Jewellers, and workmen in gold and silver, to discover all the secrets either of this composition, or of the rest that are contained in this discourse, and that for sufficient reasons best known unto my self, and such others as have spent their time, and thereby attained to any exquisite skill in this art of casting. Although I must needs confess that I have given sufficient light, even to the purblind workman to perform any excellent conceit by this discourse. And as I look for thanks of many that are ignorant herein, so I am sure to receive blame of those who with long travel and expence, have scarcely attained so much skil as they may find in this work with a few hours study. Neither may I safely set down the infinite use of this, for fear of the infinite abuse which would follow by the lewd, and sinister practises of idle, and ill disposed persons, that are ready with the Spider, to turn every thing which they touch into poison. Note

Note that your molds of glue muſt be throughly cold before you caſt your compounded wax therein, and the wax muſt be taken in a temperate heat, leſt it happen to diſſolve the mold. The true heat of your molds and wax.

Note alſo that the molds of glue, the longer they ſtand before you caſt in them, the leſſer they wax by reaſon of the water that vaniſhes away; and therefore it is an excellent deviſe, not onely to caſt ſtrange and hard patterns in, but alſo to caſt of your pattern into a leſſe compaſſe. So that if the graving of the workmanſhip of your pattern be groſſe and wide aſunder, by this means it will become leſſe, and ſhew much ſmaller and finer to the eye. And if at the firſt caſting in glue, when your molds have ſtood three or four days to dry, your pattern come not little enough to your mind, then caſt that little pattern again in glue, and let that mold lie as long a drying before you put in your wax, and ſo with often caſting in this faſhion you ſhall bring your new pattern to be of a great deal leſſe compaſſe, and finer workmanſhip then the firſt pattern. Note alſo that it is very requiſit to make your molds of glue very thick, for fear of warping, or caſting awry. It is alſo thought very requiſite to anoint your molds within very delicately with a fine calaber penſil, and with ſome of the thinneſt of the aforeſaid oils, before you put in your wax To leſſen your patterns.

You may alſo caſt all your mettaline parts in brimſtone, and from thence in wax, and after in alabaſter, and ſo into mettal. Caſting in brimſtone.

Some will mold great, and curious patterns in the crum of fine manchet well tempered into a paſt, and preſſed hard upon the pattern, and ſome commend flower, and the fat of Bacon diſſolved, and ſtrained. Molding in crummes of bread.

Artificial wax to cast in,

Note also that you must first cast all your curious patterns in yellow wax, tempered with the fine powder of small coal, and wrung through a cloath, and some think it best to put in the small coal powder when the wax begins to cool, and then to stir it well that they may incorporate together. But if you will cast off in red wax, then must you put in some red oker instead of small coal, to colour your wax withall. Some commend this composition of wax best *&c.* 2 parts of old yellow wax, one part rosen, and a little blacking dissolved and mingled together, and then streined through a fine cloth: and when you have once gotten your patterns in wax, then mold those waxen patterns in the aforesaid plaisters, alabaster, and brick powder, and then burn out the wax as before in flowers, and clear the molds, and so cast them into what mettal you please. Also when you have molded any pattern in glue, you may cast it of in Alabaster if you please.

Powders to cast in,

Some do greatly commend the fine powder of Flanders melting pots that be new, and Bole Armoniack mingled together in equal parts, you must put this powder in water, and make agitation of them together, and then pour away the same water suddenly into some clean vessel, and put in more water, reiterate your agitation as before, and so continue this work untill your water which you pour away from the powders become clear; then let all this thick water so gathered together, settle wel, and then drein away the water by declination, and after dry this powder, and keep it to make pap thereof at your pleasure. And this was commended to me by excellent men for an excellent receit.

In this manner following you may cast off in wax,

wax, and alſo in waxen molds, which is a delicate and neceſſary ſecret for them that can tell how to uſe the ſame to the beſt purpoſe. You muſt take three quarters of a pound of roſen (yet ſome uſe no roſen at all) and a pound of yellow wax, and a handfull of ſifted aſhes, melt them all together, and put in the aſhes when the reſt is molten, (inſtead of aſhes ſome uſe ſpawd, or plaiſter burnt as before) and preſently after the putting in of the aſhes, you muſt hold an iron that is red hot, or a great glowing coal to the diſſolved ſubſtances, changing your iron or coal, as often as you ſhall ſee cauſe, for by this means you ſhall keep your materials from boiling over. In this ſubſtance you may mold any pattern that you pleaſe, then take out the pattern, and you may caſt therein infinitely with a mixture conſiſting of two parts wax, and one part roſen; but let the ſame be but of a temperate heat when you pour it in, leſt you melt your molds, and after it hath taken the impreſſion, you may forthwith lay your molds in water to cool your infuſed ſubſtances the more ſpeedily: wet thoſe moulds onely with a fine cloth, or penſil, uſing no oil but in the gitty onely. To caſt in molds of wax.

If you would have a ſtrong compoſition, or earth wherein to caſt great and groſſe patterns of copper, lattin, *&c.* Then take one part clay, tempering the ſame throughly well upon a marble, with flocks, adding thereunto two parts of brick, and half a part of plaiſter well burned (as before) work all the ſaid ſubſtances well and painfully together, and caſt your metal therein: after you have molded off your patterns, you muſt ſet your molds in a veſſel full of ſand and preſſe the ſame as hard as you can about the mold, even from the bottom to the top thereof. And Strong molds for groſs patterns.

some use to cast copper, & latten works in high-gate sand, some in lome onely, some in cuttle bone, and divers other substances, which because they are more common then the rest, I passe them over in silence.

Matters to imbosse in.

The Potters white clay is very good substance to imbosse in, if you dry the same throughly, and after beat it into fine powder, and then search it, and temper it with warm water. In the working, and alwaies when you leave work, keep your clay moist in a wet cloth, till you have cause to use it again.

The lasting of the powders.

Some hold opinion that it is best to spend your aforesaid powders while they are fresh, and before they have lain long, for that the plaister of Paris being of an attractive nature, and desirous to gain the moisture which it hath lost in the burning, will lose his binding force if it be not quickly spent, but after your molds be once nealed, you may keep them a long time, so as you stop the gitties of them, that no dust may enter into the molds.

Oiling of the patterns.

Oil all your patterns of mettals, plaister, or wax with a fine pensil, and with the oil of sweet almonds, but others esteem the oyl of Turpentine or Spike, to be the best, by reason of their thinnesse, whereby they will not fill up any part of the work. Then you must pat the patterns gently over with a little clean bumbast, that you may leave the oyl very thin upon the pattern, some use *aqua vitæ* onely. And some oil their wooden patterns with oil of wex, butter, or lard melted, to keep them from blistering in the molds.

The heats and toughning of Sol and Luna.

Learn of the Goldsmiths how to take your gold and silver in their true heats, as also with what additions to make the mettal run the better and sharper, and how to toughen them both, that your work prove not brittle. If you find this work either too trouble-

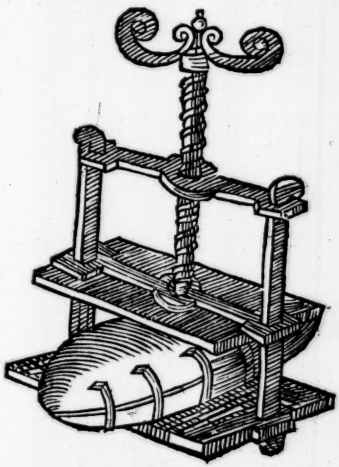
some

ſome or too curious, then make your molds ready, and carry them to ſome Ooldſmiths, which have their apt furnaces for the purpoſe, and let them heat and roughen your mettals, and then caſt them in your molds ſo made ready as before.

How to colour your patterns in gold, and how to boil thoſe that are caſt in ſilver, I muſt refer you to the Goldſmiths, although I could eaſily ſet down both the matter and the manner thereof, but becauſe therein I ſhould diſcover a ſecret, that Concerneth their whole Trade, I have thought good to ſuppreſſe it for this time. Colouring and boiling of Sol and Luna.

The firſt time that you caſt off your pattern, it wil come moſt ſharply, if the work be performed as it ought, and ever after more bluntly, but yet the ſelf-ſame pattern wil ſerve oftentimes, and deliver his impreſſion truly, though not ſo perfectly in the eye of a workman as at firſt. Which patterne commeth ſharpeſt.

Note, that you muſt have a little preſſe of Cop- A Copper preſſe.



per or Iron to hold fast your molds after they are made ready to cast in, especially when your mold consists of two parts, and the outsides of these party molds you must cramp together, when the molds are cold, with many little Iron wires made for that purpose; and then with a knife close the joynts all over with some of the said pap, which closing or luting you must also reiterate if you see cause, after the molds be nealed, placed in your press, and ready to receive the mettals, at which time it shall not be amiss in like manner to close up and stop all the cracks or chinks of your molds which you shall find in them after they be made ready to cast in, for otherwise your mettal will oftentimes run through your molds, and then is all your labour lost.

Gramping wires.

But in the casting of branches of herbs, or flowers, some commend the sprinkling of the branch or flower first over with good *Aqua vitæ* well rectified, and some wet the branch first with a little pap that is made very thin with *Aqua vitæ*, and the aforesaid powders. I have heard that you may stiffen the leaves of your herbs and flowers with fish glew, finely sliced and beaten, and after dissolved in a clean leaden pan with some *Aqua vitæ*, or water: the leaves so stiffened will dry within one hour after they are dipped therein, and within 2 or 3 hours after at the most you must mold the leaves so stiffened, or else they will relent again. *Qre.* If you may not keep them stiff as long as you please in a stove. This I have not proved, but I had the same of an excellent workman, who assured me upon his credit of the truth thereof, whereof if I could also assure others (as hitherto I have not disproved the same, and a smal time or charge would serve to make a proof thereof) I know not

Preparing the heard or flower.

not how to commend the ſame ſufficiently for the infinite uſes whereto it might be applied.

Some do make a compoſition of 4 parts of new Tyn, to one part of Latten, and caſt divers patterns therein. A compoſition of Tyn.

If you would caſt an egg, or any other pattern hollow, thereby both to have your work the lighter, as alſo to ſpare gold and ſilver, which grows to be coſtly in ſad works; then muſt you line both the inſides of the party mold with thin paſte, made of tough flower, and water onely, and wrought into an equal thickneſs by means of a rowling pin, whoſe portraiture you ſhall find in the next following page. Note alſo that upon one of the parts of your mold there muſt be made a croſſe of wire, faſtned into the mold by turning the ends of your wire into the ſame; then lay both the ſides of the mold together, each of them having their thin paſt fitted within, juſt with the circle thereof: Then at the gittee of your mold pour in ſome plaiſter made into pap, if you caſt but in lead, or elſe ſome of the firſt compoſitions, Plaiſter, Alabaſter and Brick together, if you caſt in gold and ſilver; but firſt you muſt anoint all your paſt very neatly with a fine pencil, and with the fat of Bacon, melted with a gentle fire, and before it congealeth; for this maketh your work to come very ſmooth to the outſide. Then take your mold in ſunder, and take out the paſte out of either part, and hang in the core again in the firſt holes, ſet your mold together again, cramping, and luting it on the ſides, and then neal it, and pour in the mettal, which running round about the core, muſt of neceſſity be hollow, and of an equal thickneſſe; then at ſome hole in the end or ſide of your work, you may Caſting hollow.

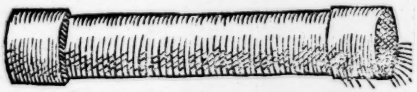
pick

pick out all the plaister, or other composition, and so you may cast any pattern both light and hollow: you must also remember to make your gitty, and to use the other means before set down, to make the one side of your mold meet with the other.

You may cast hollow and light either in lead, pewter or wax, if after you have cast your work solid, you pour out again at the bottome thereof so much as will run, but the exact time when to pour out, must be gotten by often practice, and cannot well be expressed in words.

The rowling pin.

You must have a rowling pin of a foot long, made



of six or eight inches compasse, and the same taken down the thickness of a shilling all the length thereof saving half an inch at either end, wherby you cannot, fail to make your paste all of one just thickness.

To mold the hand or face of a man.

In the aforesaid glew you may mold ones hand or face, if the party be first laid on his back, with his eys plastered over, his nose and ears stopt with wool, and his mouth closed up, saving that in the midst he may draw breath at a little hole at a pipe or quill, and then set your sides of loam, as before, about his face, which some anoint over with oil (as before) and pour on the aforesaid glew, being but temperately warm. This is an excellent device to have the lively counterfeit of the true favour and countenance of every man.

The placing of your branches.

Some hold it best to set your flowers and branches upright, and not overthwart wise, with their tops upwards, before you mold them, for so they are perswaded

ſwaded, that the leaves will ſpread abroad the better, and divide themſelves in ſunder, whereby the mettal may run into every leaf ſeverally.

Killing of the beaſts.

Some kill Toads and Frogs, which they mean to caſt, by leaving them in oyle till they die, and ſome put ſtrong water into their mouths. As for flies, ſpiders, graſhoppers, and ſuch like, you may keep in cloſe boxes, and let them die for lack of air, and then mold them whileſt they are ſtiff.

To print graved patterns upon paper.

If you would take but the print of any work, graven either in braſs, wood, or other body; Firſt, with a ſponge lightly wet over your paper with fair water (ſome commend Allom water) then make a ſable colour with the fume of ſearing wax candle, in a ſpoon, porrenger, &c. to the which put a few drops of ſallet oyl, or of the extracted oyl of Cloves, temper the ſame well together, and put it lightly upon the engraved pattern with a quilted leather, ſuch as Printers uſe; then clap the print upon your paper, lightly wet as before, and take off the paper, and you ſhall find the impreſſion very fair, if you do it carefully. Note, that if your patern be of wood, you muſt lay the ſame firſt a pretty while to ſoke in water, before you lay on your ſable upon it, becauſe the wood will dry up the colour exceedingly. Note alſo, that the ſmoke of tallow makes a good ſable, the ſmoke of roſen a better, but the ſmoke of wax gives the beſt of all other, and thereof is made that excellent velvet black, uſed in the art of Limning.

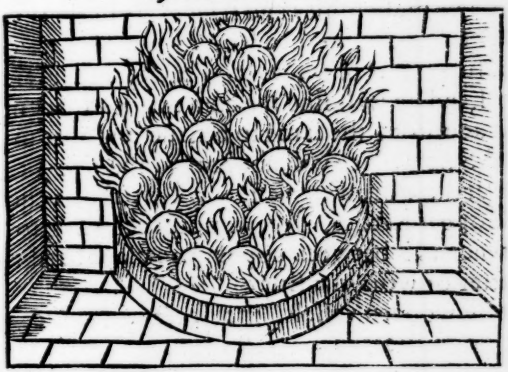
Special uſes of this Art.

It is a pleaſing and commendable practiſe by this art to mold off thoſe excellent counterfeits, of carv'd or imboſſed Faces, Dogs, Lions, Borders, Arms, &c. from Tombs, or out of Noble mens Galleries: as alſo of Pillars, Balls, Leaves, Frutages, &c. therewith

to garniſh beds, tables, court-cupboards, the jawms and mantle trees of chimneys, and other ſtately furnitures of chambers or galleries. But I may not diſcloſe the whole Art with every circumſtance, wherby to make the ſame contemptible with the vulgar ſort: onely I will give a taſt thereof unto the ſharper wits, who with ſome ſtudy and practiſe may reach unto the full perfection thereof. And therefore, whoſoever can firſt diſſolve Iſinglaſs or fiſh glew, as it ought to be, and after harden the ſame by ſuch means, as that no ſudden moiſture can make it to relent or give again, the workman and Artiſt, whatſoever he be (and I am ſure there be ſome ſuch, though but very few that I know in England) may caſt many rare and excellent patterns, in the fine filed or raped duſt of Braſil, Box, Jet, Amber, Alabaſter, Ebony, Elephants tooth, and ſuch like, being firſt well tempered with the glew, ſo diſſolved, or with the pap of common paper, being well wrought and laboured with the hand of a workman. And he may alſo make his molds of the fineſt and whiteſt Potters clay, when they have wrought and tempered it firſt in their manner. Or elſe if ſome excellent Carver in wood or ſtone did carve ſome excellent piece of a border, of a half yard long, & a foot in breadth, with antick faces and perſonages, or other frutages thereon, and with the coat-armours of Gentlemen, and other pleaſing devices to garniſh the ſame; the aforeſaid Artiſt might thereby eaſily, and with ſmal coſt, caſt off whole borders for chambers or galleries, in the aforeſaid ſubſtances or compoſition, which would ſeem to be of infinite charge. And for the better encouragement herein of thoſe that ſhall be doubtful and ſuſpicious of this skill, let this ſatisfie them,

them that I have ſeen, not far from London-bridge, divers excellent and carved patterns caſt off in ſand, and common glew, but they would endure no weather, yet they will ſerve ſufficiently within dores, ſo as they be kept dry.

143. *A new kind of Fire, of leſſe charge then ordinary with Sea-coals.*



THis fire is of much leſs charge then the ordinary ſea coal fire. It is much ſweeter in the burning, and more beautifull in ſhape, being made in the form of balls, with a little artificial Salamander. It is very durable and laſting; it is not ſo offenſive either in ſmoak or cinder, as the Sea-coal fire.

It will be an eſpecial means to preſerve Timber for the building of ſhips, and other neceſſary uſes: It will bring charcoal and billets to a more reaſonable price, for that by the uſe of ſuch a Furnace or Iron as this, there will be great ſtore of Coals and other fuel preſerved.

144. *A Vessel of Wood to brew or boil in.*

THat the same is truly and really performed, I appeal to the proofs in my Apologie published *An.* 1593. And if there be yet any manner of person that shall (notwithstanding my testimonies therein produced) either perversly hold the same to be impossible, or maliciously and slanderously reprove the invention of untruth; then let him wage such a competent sum of money, as may make an experiment thereof, and he will find the conveniency that ensues.

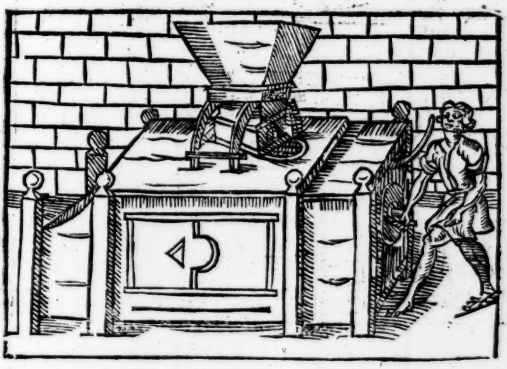
But admitting the same to be true (and that my artificial Salamander will not burn in the fire) then I say, that these brewing vessels will be much cheaper then Copper Kettles, yea, almost according to such difference as is between copper and clapboard, either in matter or workmanship.

These wooden vessels, in respect of the fire, will last twenty years at the least; and if the element of water had not more power over them then the element of fire, I think we should not need any new vessels, but for new ages.

And that which I do more esteem and commend in them then their lasting, is, the saving of fuel, which cannot be lesse then a moyety of that which is now usually spent in the houses of all the Gentlemen and Farmers of this land.

These vessels being once prepared by the Author, may afterwards from time to time, with little labour and less cost, be repaired by the owners themselves, with such art as shall be manifested to them upon their first handsel.

145. *A Boulting Hutch.*



THe price hereof is eaſie in reſpect of thoſe good uſes for which it ſerves. This Engine avoids all waſte of meal and flowr, and yet it divides the bran ſufficiently from the flowr. It will be a means to ſave boulters, which is a matter of great charge unto the Baker.

But the eſpecial uſe thereof, is, to avoid that groſs and uncleanly manner of boulting which the Bakers for want of this Engine are forced to uſe. All objections that were made againſt this invention, by the Bakers of the City of London, upon the view thereof, were ſufficiently refelled, in the preſence of divers Citizens of good worſhip and account, and therfore what inconveniencies ſoever ſhal hereafter either by them, or by any other be pretended againſt the ſame, I would have them held for falſe and malicious. This boulting Hutch is very durable, neither will it be chargeable in reparation to the owner.

146. *A Portable Pump.*

IT will be in price one of the cheapeſt Pumps of all that I know or ever heard of, and will requite but ſmall reparations.

It is light in carriage, and may be tranſported from place to place, by one ſingle man without any further help.

With the eaſie labour of one man, it will deliver four, five, or ſix tun of water, every hour, according as it is in bigneſs; neither can a man poſſibly be weary, though he ſhould work five or ſix hours together without intermiſſion.

Being placed in a fit tub that is bored full of holes, or faſtened in the water to a piece of Timber; it is a very apt inſtrument for the dreining of the fen countries, or any other ſurrounded level, or ſtanding water, pool or pond, becauſe it is ſo portable, and needs no faſtening at all on the ground, as other Pumps do.

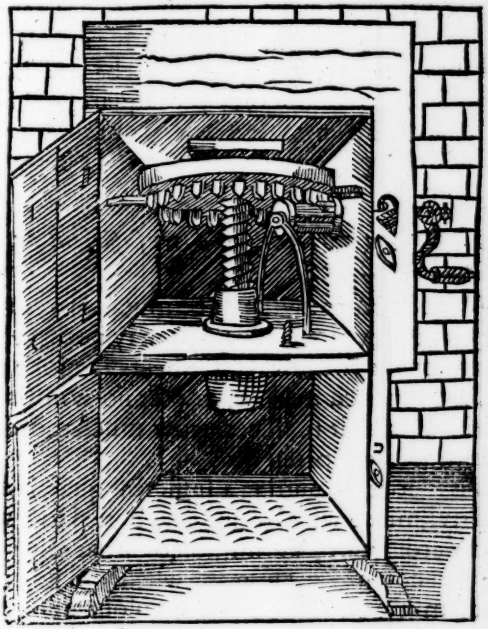
It is alſo a very convenient Pump for all ſuch as dwell near the river of Thames, to force up water

for

for the ſervice of their Kitchens, which may be performed in a moſt reaſonable manner.

It is not amiſſe, to have two or three of them in ſtore, for the neceſſary ſervice of every ſhip in her fight, if any occaſion be offered to uſe them upon any great or ſudden leak: they are but little, and require ſmall ſtowage.

147. *A wholeſome, laſting, and freſh victual for the Navy.*



An Engine for the making of this victual.

WHen Corn is ſold for twenty ſhillings the quarter, then eight ounces thereof may be afforded for a penny, which is a competent meal for any

any reaſonable ſtomack, and ſerveth both for bread and meat. It is in ſhape like wafers, light of carriage, and will laſt two or three years ſound and ſweet if it be kept dry. It may be uſed now and then for change of diet. Being carefully handled in the dreſſing, it will be pleaſing enough to the Mariner.

148. *A ſpeedy way for the inning of any breach.*

I Think it poſſible by this device, having prepared ſo many artificial ſtones as ſhall be requiſite in this work (in one months ſpace to ſhut up the great breach at Erith, and that in ſo ſtrong and defenſible a manner as ſhal be ſufficient to withſtand all the rage and fury of thoſe ſurges that ſhall beat or break upon it. The charge of every yard ſquare, will be much about five ſhillings. It is a very durable and laſting manner of work, and may be wrought in any time of the year.

149. *A light garment, and yet ſufficient againſt all rainy weather.*

THis garment will not be much dearer then our ordinary riding cloaks. It may be made as light or lighter then our uſual garments. A cloke may be prepared in ſuch manner, as that notwithſtanding a continual rain, it ſhall not grow much more ponderous then it was being dry.

This is done by putting a ſufficient quantity of Linſeed oyl, mixed with Roſin, and boiled to a verniſh, with Verdigreaſe, Vermillion, or what elſe you will chuſe to colour the ſame, and when you find that it is not clammy, but caſts a bright colour upon a rag of cloath dipt in it, then dip therein your cloth, whereof you would make your garment, and ſpread it abroad and let it dry leiſurely.

An

An Additional Diſcourſe of ſeveral ſorts of Stones, Minerals, with Gums, and the rare vertues and uſes thereof.

ALthough the word *Mineral* ſignifies mettal, or any thing digged out of the earth, yet I ſhall not need to diſcourſe of ſome of thoſe ſorts, as Iron, Tinn, Copper, and others that are within every ones knowledge, but my drift is to ſpeak of thoſe things that are moſt rare, and the uſe leaſt known; beginning firſt with Quickſilver, which ſome Philoſophers call the *mother of all mettals*, and doubtleſs is of moſt ſecret nature, and is as excellent in operation, as it is of variety in uſe and practiſe.

Quickſilver ingenders in the earth, yet ſeems to be of ſuch a ſubtil body, that the earth cannot hold it, ſecretly making its paſſage through the ſame, and working it ſelf through ſeveral veins thereof, which ſome take to be the cauſe of thoſe damps, which at certain times do come in Coal-pits, and ſuch like places, and an Apothecary did affirm unto me, that not long ſince he found in a Cellar a great quantity thereof, and by fortifying his ſpirits with ſtrong water; he got plenty of the ſame for his uſe. It is in it ſelf no leſſe then a cold poiſon, yet being prepared according to Art, it is of Soveraign uſe in Phyſick, and ſometimes it is given in its natural body, an ounce and a half or 2 ounces at a time, inwardly, for a ſtoppage in the guts, and ſome take it in milk to kill worms, but let them be ſure that the quantity given be ponderous enough to make its way clean through the body. This mineral is alſo of ſingular uſe for dividing and parting of mettals, its own body being afterwards evaporated with the fire according to the art of the Refiner. Laſtly, Quickſilver hath it denomination from *Mercurius*; for the ancient and beſt Philoſophers contract all mettals into ſeven, according to the number of Planets by whom they write that they are governed. Quick-ſilver.

Lead. Lead is another sort of Mineral, and of this there be several sorts, *viz.* white Lead, black Lead, and red Lead, the uses of all these sorts are several, and being well known I need not to speak any more thereof.

Bole-armoniack. *Bolearmoniack*, is a reddish mine, or stone; the goodnesse whereof is discerned by touching it with your tongue, and if it cleave fast to the same, it is the best Bolearmoniack: it is of a very binding nature, and much used in the making up of divers plaisters, and is also of great vertue against the Plague.

Vermilion. *Cinoper* is a soft red stone found in Mines (very admirable for its colour) commonly called *Vermillion*.

Abestos. There is brought out of Arabia a stone called Abestos, of the colour of Iron, which hath so rare a vertue, that being once set on fire, it burns like a torch, and can very hardly be quenched. I wonder some ingenious Engineer, or Fire-Master, doth not make some trial hereof, for doubtless he would find out some rare experiment thereby, very worthy, and richly answering his expectation.

Diamonds We have in England a stone or mineral called a Bristol stone (because many are found thereabouts) which much resembles the Adamant or Diamond, which is brought out of Arabia and Cyprus; but as it is wanting of the same hardnesse, so falls it short of the like vertues: and though the Adamant be the hardest of all stones, yet is it softened with Goats bloud, and there is a special Antipathy between that and the Loadstone, which is of the colour of rusty iron, and hath an admirable vertue not onely to draw Iron to it selt, but also to make any Iron upon which it is rubbed to draw iron also, it is written notwithstanding, that being rubbed with the juyce of Garlick, it loseth that vertue, and cannot then draw iron, as likewise if a Diamond be layed close unto it.

Loadstone. This stone is found in the Indian sea, and also in the Country of Trachonitis. It is of greatest use in navigation, for by it Sailers find out the certain course of their voyage, the Needle (in their Compass) tempered herewith, still standing directly towards the North and South.

Beril. The Beril, is a precious stone, brought out of India, cut most commonly with six corners, and set in Rings. It is of a greenish colour like unto the sea.

There

There is a ſtone brought out of Æthiopia and Arabia, of a dark colour like unto congealed bloud. This ſtone is of nature very aſtrictive, ſtopping iſſues of bloud, and is ſometimes made uſe of for the eating of proud fleſh out of wounds, it being of far greater efficacy then burnt Allom. Bloud-ſtone.

There is another ſtone, which although I cannot properly cal it a mineral, yet for the rare vertues it hath I cannot paſs it by without ſome obſervations thereon. It is of excellent vertue againſt poyſon, very coſtly, and of great account in Phyſick, being compounded of certain thin ſcales one upon another, like an Onion, and if it continue long in water it melteth: The middle part is ſomewhat hollow, and full of powder, of the ſame nature the ſtone is of, which is a ſure mark to know whether the ſtone be fine and true. Bezar-ſtone.

This ſtone is taken out of a beaſt in India much like a Hart, ſave that his horns are like Goats horns. The occaſion of this ſtones growing, ſome write to be this: This beaſt going to the den of Serpents, doth with his breath compel them to come forth, and then eats them; then he goes and plungeth himſelf into water till he perceiveth the fury of the venome to be paſt, and till then they will not drink a drop; after this, they feed upon many healthy herbs, known to them upon natural inſtinct, to be of vertue againſt poyſon, and by the mixture of theſe herbs with the Serpents eaten before, theſe Bezar ſtones are very ſtrangely engendred within them. It is often given in high Fevers, and to defend and ſupport the heart, and drive any evil matter from it, 3, 5, or 7 grains at a time, according to the nature of the diſeaſe, and the ſtrength of the patient.

There is a precious ſtone (rather for its luſtre then any other vertue I find of it) called a Chriſolite. It is of the colour of Gold, and ſhineth brighteſt in the morning, and is apt to receive damage if it be held too near the fire. Chryſolite.

An *Emerald* is a precious ſtone, the greeneſt of all other, for which cauſe it is very comfortable to the ſight; the beſt of theſe ſtones are brought out of *Scythia*, and *Albertus* writeth, that if the Emerald be good, it incloneth the bearer thereof to Chaſtity, and cannot endure the action of Luſt; but I do not know whether it retaineth this quality in ſo cold a Clymate as England is. Emerald.

Iacinth. In *Æthiopia* is found a precious stone, called a *Iacinth*, whereof we find two kinds, the one of a pale yellow colour, and the other of a clear bright yellow, which is accounted the best. It is cold of nature, very comfortable to the body, and provoketh sleep.

Iasper stone. The *Iasper* stone is of divers colours, but the best is green, transparent with red veins, and sheweth fairest being set in silver, and is good to stop any issue of bloud.

Iasponyx. The *Iasponyx* is a precious stone, of a white colour, with red streaks; and the *Iazule* is of a blew azure colour. They are both very costly, and therefore are best for the eye-sight, if a man hath them of his own. The *Iazule* is a kind of Marble, and in some cases may be used in Physick; it is hot and dry, and being well prepared is good against melancholy, and by cleansing the bloud, it hath a secret vertue to preserve one from Leprosie.

Iazule.

Lyncuris. The *Lyncuris* is a bright shining stone, and sometimes of a dark yellow colour like Saffron. This stone groweth of the urine of the beast *Lynx*, being congealed; which urine the Lynx hideth (as *Pliny* writeth) because men should not find it. It is good against the pain in the stomack, yellow Jaundies, and loosenesse of the body.

Onyx. The *Onyx* is a precious stone found in the mountains of Arabia, of the colour of a mans nail. Some write that it is congealed of a juyce, dropping from a tree called *Onycha*, which is the cause that it smelleth sweet being cast into the fire, as also that it is often found with divers pictures in it, being easily therein fashioned, before the stone be throughly hardned.

Opal. *Opal* is a precious stone of divers colours, wherein appeareth the fiery shining of the Carbuncle, the purple colour of the Amethist, and the green shew of the Emerald, very strangely mixed together.

Topase. The *Topase* is a precious stone, whereof there are two kinds, one of the colour of Gold, and the other of a Saffron colour not so good as the first: It is written, that this stone being put into seething water, doth so cool it, that one may presently take it out with his hand.

Orchal. *Orchal* is a stone resembling Allom, and many do make use thereof to make them have a red and perfect colour.

Margarites

Margarites are little Pearls found in ſhell-fiſh, eſpecially in Oyſters, whereof ſome have holes in them, and ſome have none; the beſt are brought out of India, yet they are alſo found in our Engliſh ſeas, as alſo in the Flemmiſh and Almain, and the faireſt Margarites grow in young ſhels. Some write, that in Thunder the Oyſters do caſt them up as it were in way of abortion, which is the cauſe they are often found in the ſands. They are ſometimes uſed by Phyſitians in Cordial confections, for they comfort the ſpirits, and are therefore good againſt ſounding, having vertue alſo to ſtop iſſues of bloud, or any looſeneſſe of the body. Margarites.

I have ſeen very fair Margarites alſo taken out of a ſhell-fiſh called a Horſe-Muſſel, and on the inſide of the ſaid ſhell remains the true mother of Pearl. I knew an honourable Lady, which by the imploying three or four men to catch theſe fiſh out of the waters, took with a little charge ſo many ripe Oriental Margarites, as made a very rich double Necklace. Alſo I knew one Mr. *Primas Davis* (a very ingenious Gentleman) who by making uſe of ſome vacant hours in taking up theſe ſhels, in a ſhort time got ſo many Margarites of an even ſize and good colour, as made him a very choice Hatband. The ſhels of theſe fiſh are on the outſide very black, and not ſo great as other Horſe-Muſſels. I have ſeen ſome in Buckinghamſhire, and other Countreys; and they are ſo plentifull in ſome parts of the river of *Clun* (which cometh out of Montgomeryſhire through ſome part of Shropſhire) that they do more then cover the bottome of that river, and were it not for the deepneſſe of the water, there would be no difficulty in taking of them. I have ſome few of the ſaid Margarites, which I took out of the ſhel my ſelf to ſee the experiment, and I further gained this knowledge thereby, That all ſuch that have Margarites in them, are rough and craggy on the outſide, the reſt are all plain; by which obſervation I ſoon avoided fruitleſſe labour, in opening of ſuch as had nothing in them. I found alſo many fair ones which were not fully ripe, and ſo came ſhort of that bright Oriental colour which others have.

This I have been the larger in diſcourſing of, becauſe it is a rarity that our own country affords, and is leſſe known and ſpoken of, then ſome things that are of leſſe worth, and great note here, which come as far as Aſia.

And although some parts of Wales are very barren by reason of the rockinesse thereof, yet I have observed that even where the earth is least fruitfull for corn or grass, there it is most rich in Minerals, as for example, I have seen digged out of one and the same mountain, Free-stone, Iron-stone, Lime-stone, Pit-coal, and fine Potters clay, such as we make Tobacco pipes of.

Iron-stone; &c.

I have also digged out of a mine, a bright sort of Ore, much like unto lead, and very ponderous, the use or vertue whereof is not known, and yet there seems to be great quantities thereof, and is certainly worthy the trial and experiment of the skilfull Artist. I have also seen a rock of pure white stone, and in glittering and brightnes far exceeding the Alabaster, onely it is something softer, and not altogether so ponderous; it is at least very delightsome to the eye, and doubtless would be found of singular use were there any plenty thereof brought up to London.

White Ore.

I could enlarge my self very far in discoursing of several other minerals, which our own land affords, but for that I shall refer you to the foregoing part of this book touching Marls; and shall wind up all in this.

A Jeweller of my acquaintance riding into Suffolk, took up in the high way, about four miles from Sudbury, a small stone of a reddish colour (like unto a dull or course Ruby) and upon trial thereof in the cutting, he found it to be of profitable use. Insomuch that shortly after he made a journy down on purpose, and found such a quantity of those stones amongst the pibbles and gravel, that he was wel paid for his journey, and hath to this day wherewith to pleasure his friend. And now a word or two of the Carbuncle, and so according to my promise I proceed to Gums.

The word Carbuncle.

Carbuncle hath two significations, namely, a precious stone, and a dangerous sore. A Carbuncle stone is of the colour of fire: It hath many vertues, but chiefly prevails against infectious air; the best of these stones will shine in the darknes like a burning coal. These stones are found in *Affrica*. Secondly, a Carbuncle is a disease, botch, or ulcer, in Greek *Anthrax*, caused of gross hot bloud which raises blisters, and burns the skin; and this disease is ever accompanied with a Fever.

Camphire.

Camphire is a little kind of Gum, as *Avicen* writes; but *Plantarius* saith, it is the juyce of an herb; it is of a white colour, and cold and dry in operation, and more frequently applied outwardly, then taken inwardly.

Amber

Amber is a kind of yellow Gum, and becommeth very hard in drying. *Meſſie* ſaith, that it groweth upon a tree, called Ibex Romana; but *Dioſcorides* ſaith, that it falleth in manner of Liquor from the Poplar tree in the River *Po* in *Italy*, where it congealeth, and becommeth hard. It comforteth the brain, and is very good againſt conſumptions. This Gum hath alſo an attractive virtue like the Loadſtone, for if it be right Amber, it will draw a thread of Linnen unto it in the ſame manner as the Loadſtone draws Iron. This is not that which is called Amber-greece, for that is not any Gum. Amber.

Aſſafetida is a dried Gum or Liquor brought out of *Media* and *Syria*, of a ſtrong loathſom ſavour and is ſometimes applied outwardly to the body, but it is moſt commonly uſed to allay the fits of the Mother by ſmelling to it; they write that inwardly taken, it hath the like operation of *Cantarides*, to provoke luſt *&c.* But let him that taketh it have regard to the quantity, as well as how it is to be mollified, leſt he find as bad an inconvenience, as many have done by taking *Cantarides*, which hath cauſed them to piſs bloud many days after. Aſſafetida.

Ammonick is a kind of Gum like Frankincenſe; it grows in *Lybia* where *Ammons* Temple was. There is a kind of ſalt ſo called, which is found in *Affrica* under the ſands, and is like Allom. This being applied to the ſide, helps the hardneſs and pain of the Spleen. Ammonick.

Anime is a white Gum, brought out of the Weſt Indies which is very pleaſant in ſmel, and of little other vertue. Anime.

Bdelium is a Gum brought out of *Arabia*, or the Holy Land, of a ſweet ſmell and bitter taſt, (which in part makes good the old Proverb, *That all things that taſt well, ſmell well; but all things that ſmell well do not taſt wel.*) It hath vertue to mollifie hard ſwellings, and is good againſt ſtiffneſs of ſinews, and other parts, and againſt the biting of ſome venemous beaſts. Bdelium.

Benſwine is a ſweet ſmelling Gum, and is good againſt hoarſneſs and the Cough, being diſſolved into water, and drunk. It hath many other excellent vertues in Phyſick, but the tree whereon it groweth is not certainly known, Benſwine.

Carranna is a Gum brought out of the Weſt Indies, of great vertue againſt Aches proceeding of cold. Carranna.

Tragacanth is a kind of Gum, the beſt whereof is clear, and ſome- Tragacanth.

somewhat sweet in tast; it is often used against coughs, and rough hoarsnes of the throat, and if it be made into a confection with other simples, it is good against hot diseases of the breast, Pluritis, inflamations of the Lungs, and distillations from the Head, &c. This confection is called at the Apothecaries *Dia Tragacanthum*; but I would rather commend to my friend *Dia Trionsantalon*, which is good against the aforesaid griefs, and against burning Agues, and to refresh the inward parts, inflamed with too much heat.

Euphorbium. *Euphorbium* is a Gum, or the tears of a strange plant growing on the mount *Atlas* in *Lybia*; it is yellowish, clear, and brittle, and may be used in Palsies (made into an oyntment) as also for the cramp and sinews that are shrunk; but to be taken inwardly it is very dangerous, unless the malice thereof be well corrected, for it scaldeth, and is exceeding hot, even to the fourth degree.

Galbanum. *Galbanum* is a Gum or liquor drawn out of a plant in *Syria* called *Mercopion*; it is of a strong savour, and very pure, close, and firm, neither too moist nor too dry; it is good against an old cough, and for such as cannot easily fetch breath, and the perfume thereof drives away Serpents from the place where it is burnt. It being applied to the womb of a woman, hastens both birth, and after birth, and being applied to the navil, it helpeth the strangling of the womb, commonly called the fits of the mother; it helpeth pains in the sides being applied thereto, and the smel thereof helps the vertigo or dissinesse in the head, as *Gallen* hath it.

Gum Arabick. Gum *Arabick* grows in *Egypt* upon a little Thorn tree, called *Acaeia*. The Ladies now a days make use thereof to fasten on their black patches, but it is of better use for making of ink, as also with the confectioner, and is of several other common uses, of which it is not my intent to treat here, as holding it too vulgar a subject.

Hypoquistidoes. *Hypoquistidoes*, is a gum or substance that grows at the roots of a plant called *Cistus*, which being bruised yeelds a liquor called by the Apothecaries as aforesaid; it is cold of operation, and hath a special vertue to stop all bleedings: Lasks, and Fluxes of the belly: We have also a certain kind of plums sold by the Apothecary, called *Injubes*, which is in fashion much like an Olive, but in tast sweeter, having a hard long stone, and being kept long

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they are dry and full of wrinckles, they are temperate in heat and cold. They are good againſt all exulcerations of the bladder and inflamations of the kidneys and the liver; for when once theſe parts come to be defective, the cure thereof oftentimes proves like *Hydra* (the beaſt with whom *Hercules* fought) that having one head cut off, there preſently ſprung forth two heads in the ſame place.

Lacca, is a kind of a red Gum brought out of *Arabia*, good againſt diſeaſes of the breaſt, and comfortable for the Liver, but it muſt be compounded with ſuch things as have a ſecret faculty to convey the vertue thither. Lacca.

Laudanum, is a yellowiſh Gum, as ſome write; notwithſtanding others affirm it to be made of a dew, which falleth upon a certain heath in *Greece*, *Avicen* ſaith, it is taken hanging on the hair of a Goats beard that hath fed upon that plant. It is hot and dry, and ſweet of ſmell, if it be pure. It is often uſed in Pomanders, and being anointed on the head with oyl of Mirtles, it doth ſtrengthen the skin, and keep hair from falling off. It opens the mouth of the veins helps pains in the ears, and hardneſſe of the womb, but is not at any time taken inwardly, as many other gums are, being put into ointments, it is very ſtrengthning, and comfortable for the ſinews. Laudanum.

Larch Turpentine, is a Turpentine or Roſin, growing upon the Larch Tree in *Italy*, uſed often in ointments and implaiſters, to cleanſe and heat wounds, it may be alſo taken inwardly with honey, and then it cleanſeth the breaſt, looſeneth the belly, and expelleth the ſtone and gravell; it is alſo good againſt the ſpleen: but that which is moſt proper and efficacious againſt that grief is *Tamarisk*, which is a little tree bearing leaves not much unlike to heath. The decoction whereof taken with wine and a little vinegar, is of great vertue againſt the ſtopping or hardneſſe of the ſpleen or melt. For this tree by nature doth ſo waſt the melt, that Swine which have been daily fed out of a veſſel made thereof, have been found to have no Melt at all. Larch Turpentine.

Turpentine, being waſhed and refined is called Venis Turpentine, which being incorporated with Cinamon, Nutmeg and the bloud of Dragons, or Gum Dragagant, and made into Pils, is good for a pain in the back by reaſon of weakneſſe, and for the running of the Reins.

Mastick. Lentisk, is a tree growing in divers hot Countreys, which beareth the notable Gum called *Mastick*. The leaves and bark of this tree stop all Looseness and Issues of bloud whatsoever, We have in *England* also a kind of fruit or grain, called Lentils, round a little flat, and of colour something black, or brown, which being boiled but once, they loosen the belly, but at the second boiling in another water, they are of a binding nature, being then good to stop the Bloudy flux, or any looseness of the body.

Mastick strengthens the stomack, and helpeth such as vomit or spit bloud: It fastens the teeth, and strengtheneth the Gums being chewed in the mouth, and is of great use in Salves and Plaisters.

Amber. Liquid Amber, is a sweet Rosin, brought from the West-Indies, comfortable to the brain, or any grief proceeding from co'd causes. This is not that which is called Amber-greece, which *Mesue* calleth, The Spawn of the Whale Fish: *Avicen* affirmeth that it groweth in the sea; others write, that it is a foam cast up on the shore, and found cleaving to the stones, which I rather incline unto, because I have heard of some quantity thereof found near the sea shore in *England*. The fume thereof is good against the Falling sickness, and comfortable for the brain.

We have also a thing called *Litargie*, which is a foam that riseth from Lead, when it is tried; It is cold of operation, and often used by Chyrurgians in Oyntments and Plaisters, being of a gentle drying, and clensing, binding nature.

Manna. In holy Scripture we read of *Manna*, to be a delicate food which God sent from heaven to the Israelites in manner of a dew, white, and somewhat like Coriander seeds, with which the Israelites lived forty years in the wilderneste, till they came to the borders of the land of *Canaan*: At the first sending hereof, the people were in such admiration, that they said *Manhu (id est)* What is this? which seemeth to be the cause, why it was afterwards called *Manna*. Some Physitians say it is a kind of Gum, but others take it to be a kind of Dew which falleth in hot countries upon trees, and there congeals, almost like Crums of white bread, and is gathered, and choicely kept, as a gentle purger of Choler. It is also comfortable and strengthening, and may be given to children, and is very good for elder persons which are in

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any consumption, or any weakness, being dissolved in Goats milk, Asses milk, or the milk of a red Cow.

Whilest I am speaking of things that are of nature cold, if it might not be thought too far a digression from my former dis- Mandrake. course, I would speak a word or two concerning the Mandrake. A Mandrake, according to the common sence in Physick, is an herb bearing yellow round apples. The root of this herb is great and white, like a Radish root, and is divided into two or more parts, growing often like unto the legs of a man. This root, but especially the bars thereof, is extreamly cold and dry, even to the fourth degree. It is therefore very dangerous to receive inwardly, for that the least quantity too much will kill any man. Chyrurgians use to steep this root in wine, and give it to such as they cut, saw, burn, or take off a limb; for the cold operation thereof causeth a dead sleep, and maketh the body insensible for a time. I dare not prescribe the quantity to be taken at a time; for onely such as are skilfull in the work, must meddle with such edged-tools.

I shall not need to meddle with such Mandrakes as are spoken of in the Scripture, for that I am sure we know not where to find them; but I have read of another sort of Mandrake which is said to have the perfect resemblance of a man or woman, and as some write, have life before they are found, (but he must be a better Philosopher then my self that believes it.)

The *Merchasite* is a stone, participating with the nature of Merchasite. some mettals, yet in so small a quantity, that the mettals cannot be melted from it, but will vapour away in smoak, the stone turning to ashes. These Merchasites are commonly in colour like the mettal mixed with them, whether it be Gold, Silver, or other mettal mixed with them; some affirm a Merchasite to be any stone out of which fire may be struck.

Mummia is more like unto Pitch then Rosin, and is sold by Mummia. the Apothecaries. (I would not bring any in dislike thereof, for that it is approved to be good and wholesome.) Some do affirm that it is taken out of old Tombs, being a corrupted humour that droppeth there from embalmed bodies; others say it is now made of mans flesh boiled in pitch: but this I am sure of, that it is hot in the second degree, and good against all bruises, spitting of bloud, and many other inward diseases.

Myrobolans. *Myrobalans* is a fruit growing in Ægypt and Syria, like Plumbs or Damsons. There are five kinds hereof, distinguished by their names, *Citrinæ*, *Iudæ*, *Cepulæ*, *Emblicæ*, and *Bellericæ*. They are cold in operation, and comfortable to nature; the first of these purgeth Choler, the second Melancholy, and the three last Phlegm. Some write of a Gum proceeding from the tree; but in regard I find no vertue in it, I may as well pass it by, as I shall the Gum that cometh out of our English Plumb-trees.

Myrrh. *Myrrh* is a Gum brought out of Arabia and Affrica, of colour between white and red: it is hot and dry in the second degree, or as some write in the third, and is often used in Physick, being of an opening, clensing, and dissolving nature. Poets feign that Myrrh first came by reason of a Kings daughter, named *Myrrha*, who for a grievous crime committed, was by the Gods turned into a little tree, and out of the branches thereof this Gum still droppeth in the manner of tears, as a token of her repentant sorrow.

Niter. *Niter* is a substance which commeth near to a Mineral; it is distilled out of the earth, and is a substance like salt, but sometimes of a lighter red colour. It is hot and dry, of a strong fretting nature, very near unto salt-peter. There is an excellent fruit of this name, very hot and strong: A drop or two thereof is very excellent against some diseases, taken in a proportion of Beer, or some other liquid substance.

Oblibanum. *Oblibanum* is the right Frankincense, and is a Gum growing in Arabia, whereof there are two kinds; the female and smaller Frankincense, and the male or greater Frankincense, whiter and stronger; of which *Virgil* speaketh, *Eclog.* 8. *Burne Vervine, fat and strong Frankincense, &c.* It is hot and dry, and good for perfumes to correct infection, and to put in plaisters for green wounds. The weight of two or three wheat corns swallowed down doth help digestion, and maketh the breath sweet; where note that the right Oblibanum or Frankincense will burn like a candle, and that which is counterfeit consume away in smoak.

Opopanax. *Opopanax* is a Gum, sap, or liquor, flowing in some hot countreys out of a plant called Panax, it is brought hither dry, being of a yellow colour on the out side, and white within; if it be not over stale, it is good against cold shiverings of Agues, and to be drunk with Mead of such as are squat or bruised, but in other griefs, I rather

ther comend the taking inwardly of *Mithridate*, which is a great confection somewhat like *Treacle*, invented by King *Mithridates* from whom it taketh the name; it is of singular vertue against poyson, and hath so many and strong simples in it, that it ought not to be taken inwardly before it be six moneths old, and then it will expel any evil thing from the heart; yet if one be weak and in a Consumption, I shall rather commend that which is strengthening and healing for the lungs, for which I find *Oringoes* very profitable; and these *Oringoes* are certain roots growing in some places near the Sea-side: The plant is called *Sea Holly*, bearing prickley broad leaves, and round sharp prickley heads, set about with small sky coloured flowers. These roots are very long and deep in the ground, of an ashy colour on the outside, and full of joynts; you must scrape off the outward rind, and pick out the pith, and preserve them with sugar or honey, a little Cinamon and Ginger, and it is very good for aged people, and such as be consumed in their bodies to nourish them again.

Pimpinchi is a milkie Gum or juyce, drawn out of certain trees in India; it is thick and clammy, and purgeth Choler with great vehemency; but that which is more commonly used to purge this humour, is called *Diagridium*: For there is a plant called Scamony, growing in far hot countreys, the juyce whereof being dryed, is a very strong and purgative medicine, called also Scamony, which before it can be used in Physick, must be boyled in Quinces, to abate the malice of it, and the Scamony boyled and prepared in this sort, is called by the Apothecary *Diagridium*. Pimpinchi.

Sagapenum is the sap or Gum of a plant growing in Media, of a yellowish colour without, and white within: It is hot and dry, of a strong smell like Garlick, and is used in Physick against divers cold diseases, but hath some malignant faculties, therefore I rather commend unto you *Dialacca*, which is a confection made of Gum *Lacca*, which is also good against all cold diseases, and the stopping of the Liver, and all other causes that may bring a man into a Dropsie. And whilest I am speaking of Medicines good against cold distempers, I cannot omit the mentioning of *Diagalanga*, which is a confection made of Gallingal and hot spices good against the wind-Collick, and other such like distempers in the inward parts. Sagapenum.

Sercocolla. *Sercocolla* is a Gum brought out of Persia, which is red and bitter in taste; it is of a healing nature, and therefore often used to close up wounds, and fil corrupt Ulcers with new flesh; for which cause it is named in Greek *Sarocalla*, which signifieth a glewer, or healer up of the flesh, therefore it is better to be applied to a cut presently done, before it wrankleth, then to a bruise or old grief.

Stechadoes. *Stechadoes* is a beautifull herb, bearing fair knobs or ears, which being boiled and drunken, doth open the stoppage of all inward parts, and is good against the pain of the head, and diseases of the breast. There is a Gum naturally congealed hereof, but it is more rare then usefull.

Tacamahaca. *Tacamahaca* is a Rosin brought out of the West Indies, of great vertue against any cold humour, rising of the Mother, tooth-ach, and divers other griefs.

Camphire. *Camphire* is a kind of Gum or Rosin which is cold, and therefore easeth pains of the head, proceeding of heat. A little quantity thereof is often used in oyntments, as in *Flos unguentorum* and others; it being dissolved, some make use thereof (especially women) against the redness of the face, Morphews and spotts But as to the latter, I do commend Oyl of Torter, which may safely be used in Smal-pox, after they shool off; for with good effect I have seen the experience thereof, both in taking away the spots, and closing up the places pitted.

Iemi. Gum *Elemi* is exceeding good for fractures of the scull, as also in wounds, and therefore is used in plaisters for that end, in Arceus his linament, which is well known to the learned, *and if the scull be broken it ought not to be handled by them that are unskilfull.*

Perrosin. *Perrosin* is the purest of the Rosin before spoken of, and sweeter in smell; both the *Rosins*, *Frankincense*, and *Storax* are commonly used together in salves or oyntments. The fir tree affordeth plenty hereof, if you take him in his natural soil. In Herefordshire near unto Lempster, I have seen many trees, which are vulgarly called firr trees; but they are of another nature, comming nearer to the Pine, out of which, if you cut but off a branch near the stock, there issueth forth plenty of juyce, which some of the people there call Rosin, others call it Turpentine, and in tryal I have found it in operation betwixt both, though in effect weaker.

Styrax

Styrax Calamintis, is good against coughs and distillations upon the Lungs; it is the like in operation as *Diacodium*, and sometimes one it used for the other, which the Apothecaries call *Quid pro quo*; but in some cases it may not be profitable for the patient. Styrax.

Castorum, is good against poison, and the biting of venemous beasts; it expels wind, eases aches and convultions, the smel of it allays the fits of the mother; taken inwardly, it helps tremblings, falling sickneſſe, and other such effects of the brain and nerves. a scruple is enough to take at a time, and the spirit is best of all. Had I leisure, I would write a larger treatise of roots, herbs, plants and fruits, which are but little known except among skilfull practisers. The thing would be of excellent use, I can now onely give you a hint of what in time may be inlarged, by my self, or a more able pen. Castorum.

There is a root brought out of the West Indies called *Carolo Sancto*, of a pleasant smell and bitter taſt. The rind whereof being chewed in the mouth, draweth down flegm and humors from the h ad, and being taken in powder in wine, is good against divers inward diseases. Carolo Sancto

Casia is common'y taken for *Cinamon*; Poets understand often by it some sweet herb, as in *Virgil*. Casia.

Tam Casia atque alijs intexens suanibus herbis,

Also *Ovid*, *Quod limus ad Casias & marde lenis aristas,*

Quassaque cum fulua substravit Cinama myrrha.

Lactantius also; *de Phaenice.*

Cinama de hinc atramque procul spirantis amomi,

Congerit & mixto Balsama cum folio.

Non Casia mitis, nec olenthis vimen acanthi.

Nec thuris Lachrimæ guttaque pinguis abest.

Where we see that it signifies two things, *Casia* and *Cinamon*. Some think it to be Lavender; for my own part I know not what English name to give it, but I am sure that *Casia signea*, is a sweet wood, much like Cinamon, and of the same nature.

Coca, is an hearb growing in *India*, the leaves whereof being bruised or mixed with the powder of Cockles, or Oysters in their shels burnt, the Indians make it up into little bals, and carry them in their mouths, to preserve them from famine, or great drought. Coca.

There be two sorts of *Coral*, the one white, and the other red, but

but the red is beſt, it grows like a tree in the bottom of the ſea, from whence being taken, is by the air hardned in the form of a ſtone as we ſee it; it is cold and dry in operation; good to be hanged about childrens necks, as well to rub their gums, as to preſerve them from the falling ſickneſs; it hath alſo ſome ſpecial ſimpathy with nature, for the beſt Coral being worn about the neck will turn pale and wan if the party that wears it be ſick, and comes to its former colour again, as they recover health.

We have growing in England upon rocks on the ſea coaſt, and upon the decaied wals of ſome old Caſtles, an herb called *Cerach* or *Fingerfern*, which hath neither ſtalk, flower, nor ſeed (no more hath Liverwort) it is much uſed in Phiſick againſt the black Jaundies, quartane agues, and ſtopping of the ſpleen.

Sena, is a little plant growing in Italy and other hot countries, but the beſt is brought from *Alexandria*; it is hot and dry, and the leaves often boiled in Phiſick to purge the body of melancholly, groſſe humours, and to cleanſe the bloud; but there muſt be Aniſeeds, Cinamon, or Ginger added to it, for that otherwiſe it will provoke windineſſe or griping in the guts.

Sebeſtens are little plums brought out of *Italy*, of a blewiſh colour and ſweet taſt; they are cold and moiſt in operation, and are often uſed by the beſt Phyſitians in hot agues, and inward inflamations of the body.

Mechoacan is a whitiſh root brought out of India, called by ſome, Indian or white Rubarb; it is hot in the firſt, and dry in the ſecond degree, and purges all humours of what kind ſoever with much eaſe; it cleanſeth and comforteth the liver, and all the inward parts.

FINIS.